The Builder.

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AFTER several years of continuous labour, Mr. Edward Cresy has produced his *Encyclopædia of Civil Engineering*,—an enormous book, containing 1,655 closely printed pages and 3,000 illustrations: and though, as might be expected, we have not yet been able fully to master its multifarious contents, we feel it to be our duty to bring it immediately before the public, and to bespeak for it that favourable consideration to which it is eminently entitled.* The labour bestowed upon it must have been immense; such a mass of information upon the subject has never before been put together in this country; and the variety and extent of knowledge shewn in it are very great.

Reviewers, we respectfully suggest, should approach a work of this description with something like solicitude; and knowing what time, energy, thought, and capital, it represents, should pause before expressing a depreciatory opinion, at all events to ask themselves if they have really seen the whole scope of the book; and if its defects or shortcomings are greater than the difficulties of the undertaking would excuse? It is not long since a similarly laborious work was "phooh, phooh'd," and abused, by writers who had evidently given to its consideration fewer hours than it had cost its author years, for two or three obvious weaknesses, without the slightest commendation for its general value and the much greater number of excellencies it exhibited. Such injustice must be painful to every conscientious mind, and injurious to the best interests of science and literature. We sincerely hope, without any personal motive to influence us in the wish, that the work now before us will receive different treatment.

Before setting forth the contents and arrangement of the book, we feel bound to remark as to the title, that it ought to have been "An Encyclopædia for Civil Engineers and *Architects*," for unquestionably the greater part of that which it treats of comes specially within the province of the latter: and there is nothing in it which they are not bound to study.

Our readers know that we do not regard with favour the separation of the science and art of architecture: it is neglect of the former which has placed architects where they now are. "Science and art," says Mr. Cresy, "are too often considered to have no reference to each other, and hence the principles of construction have been fostered by the Institute of Civil Engineers, whilst what relates to taste and fancy has been considered the province of the Royal Academy.

"The future historian of Britain will not refer to her architectural remains, but to the vast works of the engineer, by which to judge of the habits and civilization of the age. The architect is too generally confined to the pencil, in other words to the production of a beautiful drawing, a point by no means to be under-valued: but of what use is the creation of designs when unaccompanied by a knowledge of construction, by which they can be carried into effect? A picture will not shew whether the material has been well selected or judiciously employed, or if the voids and supports are properly proportioned: on the other hand, the study of the engineer is often exclusively directed to the display of mere mechanical skill, without the attempt to produce a good effect: still the demand for the ability in question is now so great, that without an increased energy on the part of the architect he will be superseded by the engineer; there is no reason why the labour of necessity or usefulness should not be embellished by taste, and a great nation has a right to expect the union of science and art, based on the severest integrity, in those to whom millions are entrusted for her improvement."

But we will not admit that the title of architect belongs to him who is confined to the exercise of the pencil, has no knowledge of construction, and cannot tell "if the voids and supports are properly proportioned." The architect is the constructor, the chief workman—director. Those who cannot direct will gradually be displaced (*are being displaced*) by those who can. Our author himself feels this. "One of the great features of the age," says he, "is the division of labour, and as the population increases, and the influence of knowledge spreads, it seems likely to be still further carried out. The province of the civil engineer at present extends over the works performed by the artificer, miner, and mechanic; he is entrusted with the direction of all that is difficult and scientific in construction, whether upon land or water, as well as designing the machinery necessary for these important purposes. This knowledge was formerly demanded of the *architect*, who in addition was required to be acquainted with the fine arts. His qualifications, according to Vitruvius, were to embrace all that could be known; and many illustrious names could be adduced to prove the requirements of the great Roman architect were fulfilled to the letter.

"To design an edifice that shall have 'Commodity, Firmness, and Delight,' or to render it both serviceable and expressive of its purpose, requires a variety of talent: and it is to be feared that the architect who confines his attention solely to that portion embraced by the fine arts, will eventually lose his power: for without studying the principles of construction, he cannot give character to his design, and is not qualified to be entrusted with the execution of a work. On the other hand, should the civil engineer be required to act as an architect, he must pursue the course adopted by Sir Christopher Wren,—set out upon his travels, and examine and study those buildings which have received the approbation of the most competent judges: and he will find that Egyptian, Grecian, Roman, and Mediæval architecture, have each its peculiar principles and character of expression."

Most truly it *is* to be feared that the architect who confines himself to that portion embraced by the fine arts, without studying the principles of construction, *will* lose his power; that is, if a man *can* lose what he has never had.

The fact is, the profession will be divided into two parts,—those who understand construction, and those who do not. Indeed, if all the subjects set forth in the "Encyclopædia of Civil Engineering," markets, walls, gates, theatres, baths, prisons, &c., &c., &c., belong to the Civil Engineers, this has already taken place, and *Civil Engineer* is the name the members of the first division of the profession have adopted. To them we shall have to look for the regeneration of architecture.

Our author in some places falls into the error which he elsewhere reproves, as for example at the commencement of the chapter on the "Principles of Proportion," where, for a comprehensive view of architecture, he refers the reader to the "Encyclopædia of Architecture," and says "we must confine our attention to the principles and science of building, *the more immediate province of the Civil Engineer*," an opinion from which we entirely dissent.

A writer in the *Penny Cyclopædia** defines more satisfactorily to us the province of the two professions. He says, "The profession of an architect and of an engineer, as they are practised at present, may be said to coincide with one another to a certain extent. The members of both must be able to form a judgment of the quality of the ground in which the foundations of their buildings are to be laid; they must be acquainted with the capacities of different materials, wood, stone, and iron, for resisting the strains to which such materials may be exposed, so that sufficient strength may be obtained with a due attention to economy; and they must equally attend to the principles of equilibrium in their roofs, arches, and domes, arranging the beams, bars, or voussoirs so that they may remain at rest with as little strain as possible upon the connecting ties by which the joints are strengthened. But here the two professions diverge from one another: while the engineer has to determine, by a process of levelling, the profile of the ground on perhaps an extensive line of country, for a road or a canal; or has to determine the forms and dimensions of his retaining walls, so that they may resist the pressure of earth or water against them; or, finally, to devise methods of rendering the action of his moving powers uniform, and of transmitting them through a train of machinery to the place where the effect is to be produced,—the architect is engaged in designing the external forms and internal arrangements of edifices, in which, whether intended as palaces or private dwellings, or as buildings consecrated to the service of religion or of the state, architectonic beauty must be combined with fitness for the purposes for which they are intended." Enough, however, at present, on this point.

Mr. Cresy has divided his Encyclopædia into two books, the first treating of the History of Civil Engineering (and Architecture), the second, of its Theory and Practice. The history, in eight chapters, includes Phœnician, Egyptian, Grecian, Roman, Dutch, French, American, and British works. The second book is in twenty-nine chapters, under the following heads: geology, rivers: composition and use of minerals: stone: bricks and tiles: mortar and cements: pisé: tar, glass: geometry: valuation of property: value of artificers' work in engineering: mechanics: machines: carriages for transport: piles: mechanical agents: hydrostatics: motion of fluids: supply of towns with water: warming and lighting: steam as a moving power: timber and its properties, carpentry, roofs: bridges, scaffolds: masonry: stone-bridges: fascines, sea-walls: canals, locks: draining: and construction of machinery.

In the historical portion the pyramids of Egypt and the baths of the Romans are very fully investigated. Ports in all countries are treated of at considerable length, and many examples are given. The chapter devoted to

* "An Encyclopædia of Civil Engineering, Historical, Theoretical, and Practical." By Edward Cresy, architect and civil engineer. Longman, Brown, and Co., Paternoster-row. 1847.

* Article, ENGINEERING.

France (80 pages in length) is particularly interesting. And the chapter relating to Britain gives a general view of all the principal works which have been executed here, docks, piers, lighthouses, gates, bridges, (including some valuable specifications), and the model prison, with details of fittings. 160 pages are devoted to the treatise on geometry, and 80 to mechanics. The division appropriated to roofs embraces a large number of examples, and the chapter on stone bridges may be studied with great advantage.

The concluding chapter, 60 pages in length, treats of the principles of proportion, and will come under our especial notice hereafter, with other divisions of the work already alluded to.

In the meantime we give some specimens of the engravings, by which this work is profusely illustrated.* Our selections all relate to the city of York. Bootham Bar is on the north-west side of the city; Monk Bar forms the entrance from the Scarborough road; and Micklegate Bar the entrance from London. The lower part of Monk Bar is of early date; the upper part belongs to the time of Edward III.

The Ouse bridge was erected in the reign of Queen Elizabeth, and was taken down a few years ago.

THE LAWS OF SOUND WITH REFERENCE TO BUILDINGS.

ROYAL INSTITUTE OF ARCHITECTS.

A MEETING of the Institute was held on the 8th instant. Mr. S. Angell, V.P., in the chair. Mr. Carter exhibited a nice drawing of the interior of the church of St. Jacques, at Liege, as recently restored. Amongst the donations was a curious work on the Five orders, by Hans Bloem, published in Amsterdam in 1598, and which was presented by an anonymous author, with a request that it might be acknowledged in THE BUILDER. It was found amongst some unnoted lumber in a house formerly occupied by Evelyn, and, as the donor thought, probably belonged to him.

Mr. Scott Russell then resumed his paper on the interior forms of buildings, with reference to the laws of sound, and after briefly recapitulating his former discourse,† said, he thought it necessary to allude to the two letters which appeared in THE BUILDER of Saturday last. The first he would speak of, signed M. C. (p. 115, *ante*), evidently by one who was well acquainted with the circumstances, shewed that he was wrong in stating that Sir Humphrey Davy was concerned in the erection of the theatre of the Royal Institution, and that the late Mr. George Saunders deserved part of the credit of its success.‡ The other letter (p. 109) referred to the *isacoustic* curve, described by him at a previous meeting, and maintained that others had previously discovered it. All he could say was, that he had discovered it for himself, and that it was an instance of a well-known fact, that different minds often light on the same truth. He had no wish to arrogate any credit to himself, and he was glad to find his own views confirmed by others. Relative to spontaneous oscillation, of which he had spoken before, and the necessity of attending to proportion in the shape of buildings, he would mention, that since meeting them, he had visited a church which had the reputation of being one of the worst buildings for sound ever erected, and that he had found it bear out his views completely. We must confess, however, without wishing to throw any discredit on the statement of Mr. Russell, that the reasons given did not account to us with certainty for the result.

The third principle he had to treat of was this,—that the angle of reflection was the same as the angle of incidence. This, although generally admitted, he considered only partly true. He had discovered, in his investigation of water waves, that this did not hold good when the *angle was less than forty-five degrees*, and he had every reason to believe, both from analogy and experiments, that it was the same with sound-waves. Reflected sound was the cause of much annoyance; reflection from the roof was the worst sort of reflection, and the most difficult to be overcome. Reflection had the effect of conveying a repetition of a sound to the ears of the auditors after the original sound had reached them, and so of producing confusion. The great point was to get rid of all reflected rays; the sound should be heard but once. In some rooms too, the thousand small sounds produced by a large crowd, such even as moving the feet, were taken up by the walls and ceiling and bandied about, in addition to the voice of the speaker. A flat ceiling increased this disadvantage. In one of the worst rooms of this description he had ever met with (a parallelogram with the platform for speakers in the middle of the longest side), great improvement had been effected by moving the speaker into the corner.

The modification of the previously mentioned maxim, that the angle of incidence is equal to the angle of reflection, he would consider as a fourth principle. The maxim was true only so long as the angle of incidence was more than forty-five degrees; if less, there was no reflection, but the sound was gathered up, and travelled along the surface. He considered this an extraordinary fact, deserving attentive examination: it would explain the phenonmenon of the whispering gallery in St. Paul's, which, on the reflective theory, was quite incomprehensible. It explained why the Arab hears very distant sounds by placing his ear near the ground. It was a vulgar notion to consider that the ground was the medium of communication,—it was the air immediately on the surface of the ground, not the ground itself.

The fact he had pointed out shewed the means of preventing reflection: it was only necessary to arrange the flat surfaces, so that sound waves would not impinge at an angle so large as 45°, and there would be no reflected sound. The old architects in our Gothic cathedrals had got rid of reflection. Our Italian Opera House, in the Haymarket, was admitted to be an admirable house for sound: the arrangement of the boxes was precisely the best sort of arrangement for preventing reflection. In Dr. Hook's church at Leeds, the speaker was singularly well heard; and in this church, he said, were combined all that he had spoken of as being likely to produce a good result: the roof was especially well-calculated to prevent reflection. He did not pretend to dogmatise, the subject was too obscure for that; he wished all he said to be regarded as merely suggestive, and he would conclude by deducing the following maxims:—

In a large room, nearly square, the best place to speak from is near one corner, with the voice directed diagonally to the opposite corner.

In all rooms of common forms, the lowest pitch of voice that will reach across the room will be most audible.

In all rooms of common forms, it is better to speak along the length of the room than across it; and a low roof will, ceteris paribus, convey the sound better than a high one. It is better generally to speak from pretty near a wall or pillar, than far away from it. It is desirable that the speaker should speak in the key-note of the room, and evenly, but not loud.

It is desirable that a rectangular room, or suite of rooms, should have their proportions multiples of the simple numbers 1, 2, 3, and 5, otherwise it will be difficult to give the noise equally. It is desirable, also, that the speaker be either at a corner, or at some simple proportion of the length, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, from the side, or corner, of the room.

In a room about to be built, equal seeing and hearing may be obtained by ranging the seats in the acoustic curve.

All surfaces at right angles to the direction of the sound should be avoided as far as possible; and angles of less than 45° with it substituted. If surfaces must be at right angles to the sound, they should be as distant as possible.

In a very large building, escape of the sound, even from the building, should be, if possible, provided by transversal wings.

In every case the separation of the wall-surface into small receptacles, like the private boxes of a theatre, the recesses of a library, or the side chapels of a Gothic cathedral, is favourable to distinct hearing.

It is the belief of the writer, that a room formed on these principles might contain twelve to twenty thousand persons, all hearing perfectly a single human voice.

The chairman having invited discussion, Mr. Donaldson said,—"buildings in respect of sound were of two sorts, those wherein the speaker occupied one fixed position, as a church, and those wherein the speakers occupied a variety of different positions, as in the Houses of Parliament. For his own part he did not see any great merit in the construction of a theatre like that of the Royal Institution, which was small, and where the voice always proceeded from one place. He should have been glad if Mr. Russell had investigated such a room as Exeter Hall, which was admitted to be one of the worst rooms in London for sound. The practical application of the science of acoustics was unquestionably very difficult, and what answered in one place did not in another. As to the partitions in the boxes of our Opera House rendering it good for hearing, there were many theatres similarly divided and cut up, wherein nothing could be heard; the San Carlos, at Naples, was an instance: and as related to preventing reflection from a roof by projections, the ceiling of our Opera House was perfectly smooth. The church Mr. Russell had described as bad for hearing in, agreed precisely with others he knew of, where the preacher could be heard well; and only the day before he had been in a church (West Ham) containing all the irregularities pointed out, as likely to produce a bad church for sound, and yet there, with piers interposing between himself and the speaker, he had heard very well. He mentioned these points simply to shew the difficulties of the subject.

Mr. Russell said, as to Exeter Hall, he had before pointed out that it was necessary, in order to ensure hearing in so large a room, that the length, breadth, and height, should be in harmonious proportion, which was apparently not the case there; moreover, there was a chamber branching out from it at right angles, which was always detrimental to sound, and the flatness of the ceiling and walls further conduced to make it a bad hearing room. He was ready to admit, however, that he was far from considering himself a sound *doctor*; still he had never found a room which controverted his views.

Dr. Bromet instanced Horsham church in Sussex, as being remarkably good for hearing in.

Mr. G. Foggo thought it desirable to mention that the Hall of Commerce, in Threadneedle-street, was very good for music, but very bad for speaking in. Mr. Harper once trying it with a musical cane he had with him, found the reflection gave the octave of his original note.

Mr. Russell thought that room might be good for music, because it was well proportioned, and bad for speaking because it had a voice of its own, and speakers had not found out the key-note. If a man had to speak there constantly, he would soon find this out, and might then voice it with considerably less effort.

The conversation turning on the transmission of sound, Mr. Alexander referred to the occurrence of sounds in his and other houses in Bedford-square, the origin of which had baffled inquiry. Mr. Papworth corroborated the statement, and attributed the sounds to the bad construction of the houses, which led to unequal settlements, and consequent strains on the timber.

Mr. Poynter said, that at a parsonage-house in the country known to him, a knocking, which was heard at certain times, and could not be explained, and had obtained for the house the reputation of being haunted, was found to to be caused by the baker at the opposite end of the village chopping his wood. The sound, it was thought, was reproduced in an old well opposite the parsonage. Mr. J. A. Picton, of Liverpool, instanced a case where similar sounds, heard in a house, were found to proceed from a steam-engine at a very considerable distance, and not audible elsewhere.

* See page 123.

† See p. 82, *ante*.

‡ Doubt was expressed on this point by some of the members. All Mr. Webster's papers are in the possession of the Institute, including the minutes of council, during the erection of the theatre, and will probably enable us to set this question at rest when we have time to look through them. It affords an instance of the rapidity with which Time obscures facts.

CHEMISTRY AS APPLIED TO CONSTRUCTION.*

BY PROFESSOR GRIFFITHS.

Carbonic acid, as it exists in natural quantity in the atmosphere, is absolutely essential to the welfare of the animal and vegetable creation, but as produced in undue quantity by the combustion of ordinary sources of heat and light, if it have not ready egress, acts as a narcotic poison upon man and animals, and as a poison to most tribes of the vegetable kingdom.

The chemist can prove that six parts by weight of carbon, when perfectly burned, produce twenty-two parts by weight of carbonic acid; hence the extreme danger of burning common charcoal in a brazier to warm or dry an apartment, unless there be a good ventilation, for the whole of its atmosphere will soon become impregnated with the mephitic vapour, and a person entering would be rendered insensible.

It is commonly supposed that the carbonic acid resulting from burning charcoal in a brazier remains as a heavy stratum of vapour upon the floor of an apartment as it does upon the floor of the "grotto del cane," and that no danger is to be apprehended in entering the apartment if a person stand upright, but this notion is seriously erroneous, as the chemist can immediately prove.

It is perfectly true that carbonic acid, however it may be produced or evolved, is heavier than air, and will fall or subside through air when it is of the same temperature as the air, or when it is of a lower temperature than the air, and such is the case in the "grotto del cane;" but as carbonic acid is formed during the combustion of charcoal, it is materially *lighter* than air, because it is of an exceedingly high temperature, or, in other words, rarefied by the heat; and, accordingly, it ascends in virtue of this thermal levity, and blends uniformly with the air of the apartment, whilst another curious action is simultaneously ensuing, viz., the charcoal, in order to burn and to continue burning, must have *oxygen*, it takes this from the air to form *carbonic acid*, but leaves the *nitrogen*, which is equally mephitic, so that, in the course of a very short time, if no egress be permitted for these substances so inimical to life, the entire volume of the air becomes thoroughly vitiated, and a person entering the apartment would be suffocated.

Another fact in connection with the point in question demands attention. Suppose (as is frequently the case when work is to be hurried) that a brazier containing a bushel of burning charcoal be placed in the middle of a room, and then all the doors and windows be closed "that the heat may dry the plaster walls," why, in the course of an hour or two, when the workman thinks "the charcoal has burnt out," or the "brazier wants filling," he opens the doors "to let the foul air escape," and after a few minutes he enters, and finds to his surprise that "the fire is quite out, though there is plenty of charcoal left in the brazier." He is at a loss to account for this, but the reason is extremely simple; the combustion or burning of the charcoal ceases when it has withdrawn the greater portion of oxygen from the air to form carbonic acid, and has liberated nitrogen, for charcoal can neither burn in the compound result of its own combustion, nor in the elementary nitrogen, for these two extraordinary substances are as fatal to flame as they are to life.

In order to effect the entire combustion of the charcoal used in drying the walls of an apartment, the top sash of a window should be opened a few inches, and the door left "ajar" to a similar extent; or if there be two windows, the top sash of one, and the bottom sash of the other, should be thus opened, and the door closed; and then, in the first case, the heated carbonic acid and nitrogen would escape by the window, whilst fresh air would enter by the door, to supply the fuel; and in the second case, the escape would still be by the top of the one window, whilst the entrance of the fresh air would be at the bottom of the other. A ventilation thus established would have the additional advantage of carrying off the steam produced from the damp walls, instead of its "sweltering" them, as when the apartment is confined. And if several shallow pans, filled with "cream of lime," be placed upon the floor, and at different heights above it, much of the carbonic acid would be withdrawn to form carbonate of lime; thus an additional call would be made for the entrance of fresh air from without.

Let us now examine the sources from whence the great supplies of quicklime are derived. Carbonate of lime is presented by nature in vast abundance, and is familiarly known as marble, limestone, and chalk; in these substances the carbonic acid and the lime are held together with a certain degree of chemical affinity, and under all ordinary circumstances they manifest no tendency to separate from each other, but this affinity can be readily overcome by several chemical agents.

Thus, if a fragment of marble, limestone, or chalk, be placed in a clear glowing fire, and there allowed to remain thoroughly red hot for about an hour, upon removal and cooling, it will be found to possess all the characters of "quicklime," because the heat of the fire has caused repulsion to ensue between the carbonic acid and the lime, the former being volatile, escaping with the products of the combustion of the fuel, whilst the latter being fixed remains behind. Upon this fact is founded the ancient and well-known practice of "lime-burning," but all varieties of native carbonate of lime are not equally adapted for "burning into lime" for the purposes of the architect and the builder; thus if pure white marble be heated, its decomposition will be effected, but the resulting lime will appear in a sandy or pulverulent form, due to the crystalline particles of the marble being violently thrust apart, as the carbonic acid escapes, and this sandy or arenaceous form of lime does not admit of ready separation from the ashes of the fuel employed in the furnace or kiln, in which the "lime burning" or *calcination* is conducted.

Pure white marble, or *primitive marble*, as it is called by geologists, from the fact of its never containing *organic remains*, is rarely used as a source of quicklime, but the common *limestones*, called *secondary marbles*, from their containing such remains in abundance, are mostly selected; but even then, an examination upon a small scale should be conducted to ascertain that such varieties neither crumble into dust nor fuse by the heat of calcination, for some limestones containing *silica* or the pure matter of *flint*, will readily fuse into a kind of "slag," on account of chemical affinity exerted between the silica and the lime, as noticed at an early period of this inquiry regarding calcareous compounds.

A good and suitable limestone having been employed, the resulting "quick-lime," although very porous and very light, still retains much of the shape of the original limestone; that is to say, it is in lumps admitting of ready removal or carriage, such as the well known Staffordshire and Dorking lime.

Lime, from limestone, or "stone lime," should slake perfectly with water, and wholly crumble into hydrate of lime. This is a good and simple test of its "quickness." If, on the other hand, a hard "core," of a different colour to the surrounding lime, remain after "slaking," this proves the "lime-burning" insufficient, as the "core" is still undecomposed limestone; and if a fragment of the "core" be thrown into muriatic acid, diluted with an equal bulk of water, a plentiful effervescence will arise, due to the expulsion of carbonic acid.

Generally speaking, the "cores" being very hard, or stony, and different in colour to the lime, they are easily discovered, and separated during the slaking; but with "chalk lime" the "cores" are nearly as white as the original chalk, and actually consisting of it and being soft, are easily and frequently broken by the spades, shovels, or other tools employed by the workmen during the slaking, and thus become mixed with the real hydrate of lime.

If a lump of chalk lime be suspected as imperfectly burned, it will not perfectly crumble away when mixed with water, and its "core" will effervesce with the acid just named.

The only lime employed in some counties is obtained from shells, of which beautiful natural productions there are two classes, known as porcellaneous and mother of pearl shells. The hardening, *inorganic*, or calcareous portion of these classes is similar to the matter of limestone, viz., carbonate of lime, but the portion which confers strength and toughness upon porcellaneous shells, is an *organic* compound termed *gelatin*, on account of its identity with ordinary *jelly*, and that of mother of pearl shells is an *organic* compound termed *albumen*, on account of its identity with the *white* of egg.

Carbon, oxygen, hydrogen, and nitrogen, are the *ultimate* elements of these *proximate* principles *gelatin* and *albumen*, and when heated or burned, these principles are decomposed, and resolved into several curious and complicated compounds, the chief of which are easily volatilized. Accordingly, if shells be heated to redness or calcined, their organic principles are decomposed, their inorganic principle or carbonate of lime is also decomposed to a certain extent, that is, the carbonic acid escapes, and quick-lime remains.

Probably the use of "shell lime" cannot be strongly recommended, unless the shells have been well washed in fresh water, to free them from the saline matters of sea-water, and then wood should not be used as the fuel for their direct calcination, as its ashes yield alkaline matter, which, mingling with the lime, would render mortar made of it liable to remain damp; it has been proposed to calcine the washed shells in iron cylinders, properly set in a furnace, so that a current or draught of air may be created through them, and this leads to the mention of a very curious fact connected with the philosophy of "lime burning."

Although heat has been frequently cited as an agent for the decomposition of carbonate of lime, it is found that no thorough decomposition will ensue, if the aperture of the vessel employed for the calcination be closed against the access of air, the smoke and flame of the fuel, or the vapour of water.

If, for example, dry chalk be heated in a vessel so constructed as to prevent the access of these agents, very little carbonic acid will escape, the chalk will become hard and semi-transparent, like marble.

Palladio mentions that limestones, taken from a dry pit, are not so good for burning into lime as those from a moist and shady one. This fact is well known to our "lime-burners," and it appears, that the access of air, the smoke of the kiln, the watery vapour, all promote the escape, or wafting away, of the carbonic acid; or, in other words, when a limestone is dry, and heated in a covered vessel, that the small portion of carbonic acid evolved upon the *first* application of heat remains as a film, or stratum, preventing the evolution of any further portion.

As quick-lime forms the basis of mortar and many cements used in building, a general statement concerning the chemistry of these useful materials may now be entered upon.

Perfectly burned lime should be selected, and slaked with water, the purer the better: dirty river water should not be used, as it would contaminate the lime with extraneous matters; and above all, sea-water should be avoided, as containing saline matters, which would interfere with the proper setting and drying of the mortar.

The French builders have three methods of slaking lime, which they denote by the terms, *extinction ordinaire*, *extinction par immersion*, and *extinction spontanée*. The first is the common plan of heaping up the lime, and adding water to this until it is all converted into hydrate. The second consists in placing the lime in baskets, plunging these into water, then quickly removing them, and emptying their contents into a pit, which, when filled, is closed by a trap-door; thus the water, vapourized by the heat of the chemical action, or more familiarly, the steam, is prevented from escaping, and compelled to abide in contact with the lime, thus insuring its perfect conversion into hydrate. The third method is to spread the lime in thin shallow layers upon the ground, that it may absorb water from the air, and thus slowly become hydrate without the evolution of heat. Of these methods, the first is the easiest, the second the best, and the third the worst, excepting for some kinds of hydraulic lime, for the lime, in addition to becoming hydrate, passes into the state of carbonate.

From the best experiments upon the subject, it appears that the proper sand for mixing with the lime to constitute mortar is "river sand," wholly *silicious*, and of a sharp clear grain. This sand may be immediately distinguished from *calcareous* sand by its not effervescing in dilute muriatic acid. Sea sand, unless most perfectly washed in fresh water,

* See p. 96, *ante*.

is wholly unfit for the purpose, on account of its saline matters.

The proportion of clean sand should always exceed that of the lime, thus an excellent common mortar can be made of three parts of fine sand, four parts of coarse sand, and one part of the best slaked lime beaten up with as small a quantity of water as practicable.

Such mortar may be used immediately, or if placed from the air in pits, it may be preserved for a great length of time without suffering any deterioration; on the contrary, probably the older it is the better, because the lime becomes most perfectly hydrated, and intimately mixed with the sand, every grain of which becomes fully encrusted.

Then, a short time previous to the employment of such mortar, it must be mixed with a little water and perfectly well "gaged." It will soon "dry or set," because the lime and sand are in a favourable state for acting upon each other as also upon the air. *Silicate of lime* and *carbonate of lime* are simultaneously produced, and the mortar assumes the firmness of stone.

The superiority of Roman mortar over that now commonly used was referable, in the first case, to the care taken in the selection of proper materials, and in the next, to the age and maturity of the mortar before it was employed in construction. There are many persons who, in their enthusiasm for every thing bearing the stamp of antiquity, will state that "nothing like ancient mortar can be now produced, even with all the means and appliances of science, in fact that the secret is lost, and that science cannot direct the way in which it is to be discovered."

But this is not the case; real practical men *can* produce mortar that in the course of a few years will rival in hardness any Roman specimen, providing they choose a good limestone, have it thoroughly calcined, its lime perfectly slaked, mixing this with a clean, sharp grained, silicious sand, and pure water, and permitting the mortar to become matured by burying it out of the contact of air.

There is no secret to be mourned after or hunted out, for Pliny and Vitruvius expressly mention that the firmness of the mortar of the buildings of Rome was due to its careful preparation, and its three years' maturity before employment.

The Greeks were very scrupulous in their attention concerning the mixing and blending of mortar; ten men were constantly employed to each "bason" of materials, stirring, mixing, and incorporating them together; and Vitruvius states, that such mortar, or plaster, when set after the lapse of years, was so excessively hard as to serve for the formation of tables.

It was a maxim with old masons to their workmen, that "they should dilute with the sweat of their brow," that is, "labour the mortar for a long time, instead of drowning it with water, in order to have done the sooner."

These ancient worthies would be petrified with horror could they behold the process so commonly followed at present for making the trash called mortar, that is destined for "running up" the cheap and bad buildings which disgrace the environs of the metropolis.

In the first place, the lime is often imperfectly burned; in the next, it is brought in wagons or carts regardless of the weather, "fair, changeable, or rain," and "shot" near the site of the proposed erection, where it probably remains for some days, whilst a shew of protection from the weather is made by covering it with ragged sacks, tattered tarpaulin, or shattered wainscotting.

During the interval, several carts arrive heavily laden with the sweepings and scrapings of the roads ("road stuff") abounding in vegetable and animal offal, and filth of every description. A board conspicuously placed announces "Rubbish may be shot here;" a passer-by would naturally imagine that the "road stuff" came under the denomination of "rubbish," and that the scavengers were eagerly availing themselves of the permission for its deposition;—no such thing,—this foul "road stuff" is destined to enact the part of the "clean river sand" that was formerly used, and should still be used in the formation of mortar.

Two or three loads of "road stuff" are stratified with a load of the lime, then water, not always of the cleanest description is thrown on the heap, and the slaking proceeds most imperfectly; this mixture is subsequently "screened" to separate the unburnt limestones or other stones, then drenched with water and made into a paste with the least possible expenditure of human labour and attention.

Such is the "mortar" as it is carried to the bricklayers, who apply it to cheap, porous, bricks; these are sometimes warm, nay even hot from the kiln; the water is therefore rapidly absorbed as by sponges, scarcely any silicate of lime can form, and very little carbonate of lime, since the lime was probably bad in the first place, rendered worse by exposure, and encumbered, like the silica or sand of the "road stuff," with extraneous matters.

These things are unheeded, the work proceeds, the walls rise above ground like mushrooms; the carpenters, and then the joiners, make their appearance, and in fixing scanty beams, slender rafters, thin flooring boards, attenuated sash-frames, flimsy staircases, contorted handrails, "shakey" skirtings, and "sappy" panelled doors, they keep the "carcass" in a violent tremor, instead of permitting the calm repose which is so essential to its frail constitution.

Suppose the "carcass" sustain these shocks, and the weight of the slating, tiling, iron, and other metal work; the plasterers are introduced to commence their decorative operations; they cover the bare and trembling walls first of all with a coating of the aforesaid "mortar," and afterwards with a coating of "fine stuff," then leave work, highly gratified at the smooth change which their labour has wrought upon the rugged state of affairs. All looks well, but soon the respective apartments become saturated with the vapour of water, produced by the drying of the plastering, and then the woodwork begins to swell, "cast," and crack into various deviations from its intended rectitude of shape, in consequence of absorbing water. This is unheeded; the painters begin, and disguise such deformities by the joint agency of "stopping, knotting, putty, and priming." In the course of a few days the plastered walls that should be smooth and fair, are covered with excrescences and unsightly eruptions. Surely this defacement is not an act of wanton mischief!—No!—Then what is its cause? Why the lime of the "fine stuff" was as badly slaked as that of the mortar, and, therefore, numberless portions of it remained "quick," caustic, or anhydrous, up to the time of its application by the plasterer's trowel; and then, slowly absorbing water from the coarse coating beneath, or from its own coating, such portions slake and swell, and rise in lumps or blisters. These are all patched up and repaired as quickly as possible, because the paper-hangers must come in; but perchance the walls are yet too "green" for their admission, or the weather is damp, the walls must be dried.

Accordingly, a large brazier, filled with burning charcoal, is introduced, and set on the floor in the centre of the room, exactly under a flimsy showy "patera," in the centre of the newly-plastered ceiling; the charcoal burns, the room becomes very hot,—the heated products of combustion chiefly accumulating in the vicinity of the patera and mouldings. These, probably, cannot stand such treatment, for the rapid drying causes them to crack, perchance to fall, whilst cracks and fissures, infinite in the variety of their magnitude and shape, appear upon the ceiling and the walls, all announcing the result of the forcible abstraction of water by the hurried heat of drying.

"Repairs executed on the shortest notice, and the most reasonable terms," the ceiling is restored to a decent appearance, the cracks in the walls are filled without regard to any appearance, and at last all this cobbling is hidden from the sight by "a gaudy penny paper," the colours of which are soon acted upon by the lime of the plaster, and are ever varying as the hues of the chameleon.

But what has become of the painters' work and the iron stoves all this time? Why, exposed as they have been to an atmosphere saturated with water, every patch and spot of the "knotting" can be seen through the thin and finishing coat of paint; whilst the stoves have rusted, and the rust has stained the stone or marble mantel-piece.

Then upon "lighting a fire," the chances are that the chimney will not draw, but clouds of smoke, instead of ascending through their destined channel, rebel, and roll down and fill the room. In general, vain is the hope "that things will be better when the chimney is dry," the smoke nuisance continues, discolouring ceiling, paper, and paint.

"A chimney doctor" is consulted. He suggests that "coring is wanted, or may be a brick is sticking out somewhere," but engages to make the "chimney draw" by putting a metal funnel on the chimney-pot, forgetting that the chimney is a long crooked passage, chilling the smoke, and thus depriving it of ascensional force, so that the attempt to cure the evil by such means, is like having a short, straight lane at the end of a long winding road, to give strength to a jaded horse, and make him "draw."

Such are a few, and a few only, of the unscientific proceedings that are adopted in the construction of cheap modern dwellings; and if space would allow, many other examples of the same kind might be brought forward (as probably they will be, at a future opportunity), but mention must now be made of some mixtures in which lime enacts a part as important as it does in ordinary good mortar.

"Grout," or liquid mortar, has the advantage of penetrating the pores of the bricks by capillary attraction, perfectly filling them, and ultimately setting into a hard mass of silicate and carbonate of lime, thus conferring great firmness and strength.

The researches of the chemist teach that the varieties of limestone, containing a portion of *alumina* (clay) and oxide of iron, yield, when calcined, a lime having considerable superiority over pure lime. The lime now alluded to is technically called *meagre lime*, of which the "Dorking lime" presents a specimen. The lime obtained from a pure simple limestone is white, or nearly so, whilst that from an alumino-ferruginous limestone has a buff, brown, or ochrey tinge; this announces the presence of oxide of iron, and such lime is the best for "cements."

Common mortar soon softens and disintegrates, if exposed to the action of water before it has had time to harden; and, therefore, in order to form "water," or "hydraulic mortar," a different mixture of materials is required.

Certain portions of alumina and oxide of iron are added to the lime and sand; this mixture being well tempered with water, will "set or harden" under water, but a native ferruginous clay may be used (as it contains alumina, silica, and oxide of iron), although not in its crude or raw state, to mix with lime, because it will effectually prevent the induration of the mortar: let it be calcined and rendered anhydrous, then mix it with lime and water, and it will harden under water.

Some natural productions contain the above requisite ingredients already calcined, and fit for immediate use; *puzzolano* for example as ejected from Vesuvius, when finely powdered, sifted, and properly mixed with lime, forms the ancient "Roman cement."

"Trass or terras," a variety of basalt supposed to be of volcanic origin, acts similarly to *puzzolano*, and is used in making the water cement that is so much employed in Holland, and where the foregoing materials cannot be had, the nodular masses called *septariæ* may be advantageously calcined, to yield the hydraulic mortar known as "Parker's cement."

All hydraulic mortars and cements should be slowly dried, and from many experiments that have been made upon this truly important subject, it appears that their strength increases as they are suffered to dry out of the contact of air. The theory of the hardening of these cements consists in the strong chemical affinity that exists between silica, alumina, lime, and oxide of iron, and thus not only is a single silicate of lime formed as in ordinary mortar, but also silicates of alumina and of oxide of iron; these have the power of combining, and of remaining combined against the solvent power of water.

THE NAPOLEON MONUMENT.—The Emperor of Russia has ordered blocks of the splendid porphyry of the Crown Quarries to be sent to Paris, in order to meet the wishes of the French Government to obtain the finest porphyry in the world, wherever their agents could procure it, for the monument at the Invalides.

PROFESSOR WILLIS ON THE CONVENTUAL BUILDINGS AT CANTERBURY.

On Friday, the 5th instant, at the meeting of the Archæological Institute, Professor Willis gave an account of an examination which he has lately made into the arrangement of the conventual buildings at Canterbury. In his former essay he had deferred this part of the subject, but we believe that an account of his late researches will also be published. The professor said, that, as regards the present subject, we had not the advantage of a careful chronicle, like that of Gervase, but we had what was more valuable, viz., an actual plan of the whole arrangement. This was preserved in a MS. psalter, now in the library of Trinity College, Cambridge. It had been engraved in the second volume of the Vetusta Monumenta, but not so as to be of much value, and without any consideration of what it was intended to explain, for, in the original, the different parts had been expressed by different colours. It was true that on the drawing there was no title, but it was quite clear, as the professor showed, that it could belong only to Canterbury. He had made an exact survey of the ruins, which were scattered about through several houses and gardens. The result was the plan before them, which he proceeded to compare with a transcript of the old drawing, both being on the same scale.

The first thing which should be mentioned was, that the drawing in the MS. had been made during the period between the death of Anselm and the fire of 1174. It therefore necessarily gave a very different view to that of the building in its present state, or even in a period little later. For instance, on the north, the original plan shewed two walls, with a road between, one being the boundary of the precinct, and the outer, the wall of the city; but it was known that the monks had obtained permission to include the space within their precinct, on the condition of keeping the city wall in repair.

The professor then explained other points of difference, and proceeded to compare the component parts of the plan he had laid down, with that of the monk, noticing the north-west gate, and the gate of the cemetery at the south-west; the cloister,—which was at present perpendicular, but had, on its east side, clear evidence of its original condition, in some Norman doorways—and the chapter-house. The dormitory was an immense building, 145 feet by 80 feet, and was supported upon a substruction of piers, which remain, as well as some of the original windows of the dormitory. It had been supposed that this building was roofed in two spans, and this he had been able to confirm, from the existence of a pier in the end wall. In this part of the plan, and throughout, we found evidence of the greatest attention to convenience and comfort, as well as to health, and the examination of such buildings would afford many valuable hints for the arrangement of domestic edifices. There was ready communication, by enclosed passages, with the cloisters and other parts of the plan, so that, though to be considered mainly as an assemblage of detached buildings, access could be had from one to another, without exposure to the cold. The passage to the church still exists, supported by a cloister, of pure early Norman architecture, and which might almost be mistaken for the style of Wren, or Inigo Jones, and served to show how slight was, in reality, the separation between the Roman and the Romanesque styles. The passage was raised because the choir was raised upon its crypt.—The professor then noticed the kitchen and refectory, which were united by a passage, and the *cellarium*, and other offices. Perhaps the most curious building of all was the *necessarium*, which was of great size, and from its arrangement, and character of decoration, was clearly considered to be not less important than any other department, and occupied an equally conspicuous position. It had a centre division and side aisles: in the latter were stone seats, the whole number being half that of the monks. These conveniences were well ventilated and supplied with water.

The infirmary externally appeared, like the body of a church, with a chancel to it, and indeed here, and elsewhere, had often been considered to be for that purpose. But in reality these buildings were infirmaries, with a chapel at the end, having its own chancel. There were similar buildings at Ely and Peterborough. The infirmary department included also a kitchen, a necessarium, and a refectory for convalescents.—The house of the prior was then noticed, as confirming, in a striking manner, previous remarks on the arrangement. The prior's chapel, of which the present building was indeed later than the monk's plan, shewed great ingenuity, in many points connected with its situation. The prior had ready access to the choir, and to all parts of the convent, and, by means of hagioscopes, he was able to see the celebration of masses in the church. One of these hagioscopes had, in fact, several slits or perforations, so inclined or radiated, that it gave views of altars in several positions. Now this, he thought, explained a reference to the building which had given him some trouble, and that "domus rastri," the house of the rake, or harrow, referred to this building and hagioscope.

The account further extended to the house of the guests, the refectory for distinguished visitors, and the locutary, or place for conversation. The gateway of this latter portion was now enclosed in the house of one of the canons. The staircase, drawn in Caveler's work, was also shewn upon the original drawing. The outer and inner cemeteries stood on the south side of the church.

The professor said he had thus vindicated the accuracy of the monk's drawing, but he proceeded to give what was evidently the object with which it was made, namely, the explanation of the distribution of the water. The plan was intersected by lines in different colours, representing water-courses, and these, with the exception that iron pipes had been substituted, still supplied the houses of the canons. The water being obtained from some distance on the north, flowed by a canal through several ponds, passing the wall under a tower.—We regret that we are not able to describe all these ingenious contrivances without the assistance of the plan, but it may be sufficient to mention a few particulars.—The professor shewed that the water was deposited in a central situation, in an octagonal building, which had been called the baptistery, but which was really the *castellum aquæ*. The drawing showed a central pillar, or cluster of pillars, through which the pipes rose, and this he had confirmed by examination. The water emptied itself into a basin, whence it was distributed to all parts of the convent. In another locality, there was a similar building, probably used as a lavatory. There was a contrivance for getting rid of the water, and cocks were mentioned. The waste water was carried under the necessarium of the infirmary, and then divided to cleanse the two aisles of the great necessarium. The waste was finally ejected into the town ditch. At one place there was a spot marked "puteus" on the drawing, and this well was, no doubt, for a further supply, in times of drought.—Certain lines were marked yellow, and these indicated the rain-water pipes. One pipe, attached to the reservoir, was called "purgatorium;" this was probably (as we understood) an overflow pipe.—He also showed a transcript, from the same source, of another drawing, which had never been published, which drawing further explained the course of the water, and he also exhibited a plan of the monastery of St. Gall, which we have frequently referred to, which had been lately published, with a description, in Germany. The professor concluded by saying, that when proper allowances were made, the drawing must be considered as one of great interest and value. From old drawings, much information could be acquired, if we looked at them, considering that only which they were intended to represent. He thought that the names of many buildings in monasteries had been given somewhat hastily, and he expressed an intention of again returning to the subject.

In the discussion, which ensued, Professor Cockerell and others joined, and Dr. Bromet mentioned a fine example of a monastic building at Angers. A question was also asked as to the uses of pulpits in refectories. A letter was read from the town clerk at Doncaster, in reply to an application from the Institute respecting the preservation of the church of St. Mary Magdalene, which, our readers know, is shortly to be destroyed. The letter called forth some laughter:—the authorities were quite ready to admit everything represented to them, and, had not the site been so central, would have been ready to preserve the building; the applicants would, however, be allowed to re-erect the building wherever they pleased, and the Town Council thought it expedient that a draughtsman should be engaged to make careful drawings.—A letter was also read, denying the reports, as to the mutilation of the church of Deerhurst.—Mr. Petrie and Dr. Todd had also been applied to, respecting the reported interference with some remains in Ireland. The answer from the former stated, that within his own recollection, the destruction had been most deplorable, and of 300 inscribed tombs, which he had known, perhaps 12 did not now remain. The importance of some Government interference was shown to be very great, and the proceedings of the Ecclesiastical Commissioners were censured.—The Marquis of Northampton made a valuable suggestion respecting the opportunity which the establishment of public parks and gardens afforded, for the preservation of antiquities.—Mr. Hawkins commented severely upon the continued inattention to the state of danger of the Chapter House at Westminster, and of the valuable documents which it contains, and the Dean of Westminster, who was in the chair, after showing that this was a matter entirely in the hands of Government, confirmed the statement, saying, that far from being in an ordinary state of safety, the danger was most imminent.

THE IPSWICH COMPETITION.

An advertisement from the committee for the erection of a new mechanics' institution, to whose proceedings we have already referred, informing competitors, that the design bearing the motto of "May they please you" has been selected, and that the other plans may be had on application, conveys to us the disagreeable intelligence, that architects were found sufficiently abased to submit designs on the insulting terms offered by the committee. Up to this time the whole proceedings have been secret and mysterious, but we hope to be able to remove the veil, in order to see how the committee have discharged the latter part of their duty. Their proceedings in the first step make us very suspicious of the second.

PRICE OF TIMBER.

The *Mark Lane Express* of March 1st gives the following list of prices:—

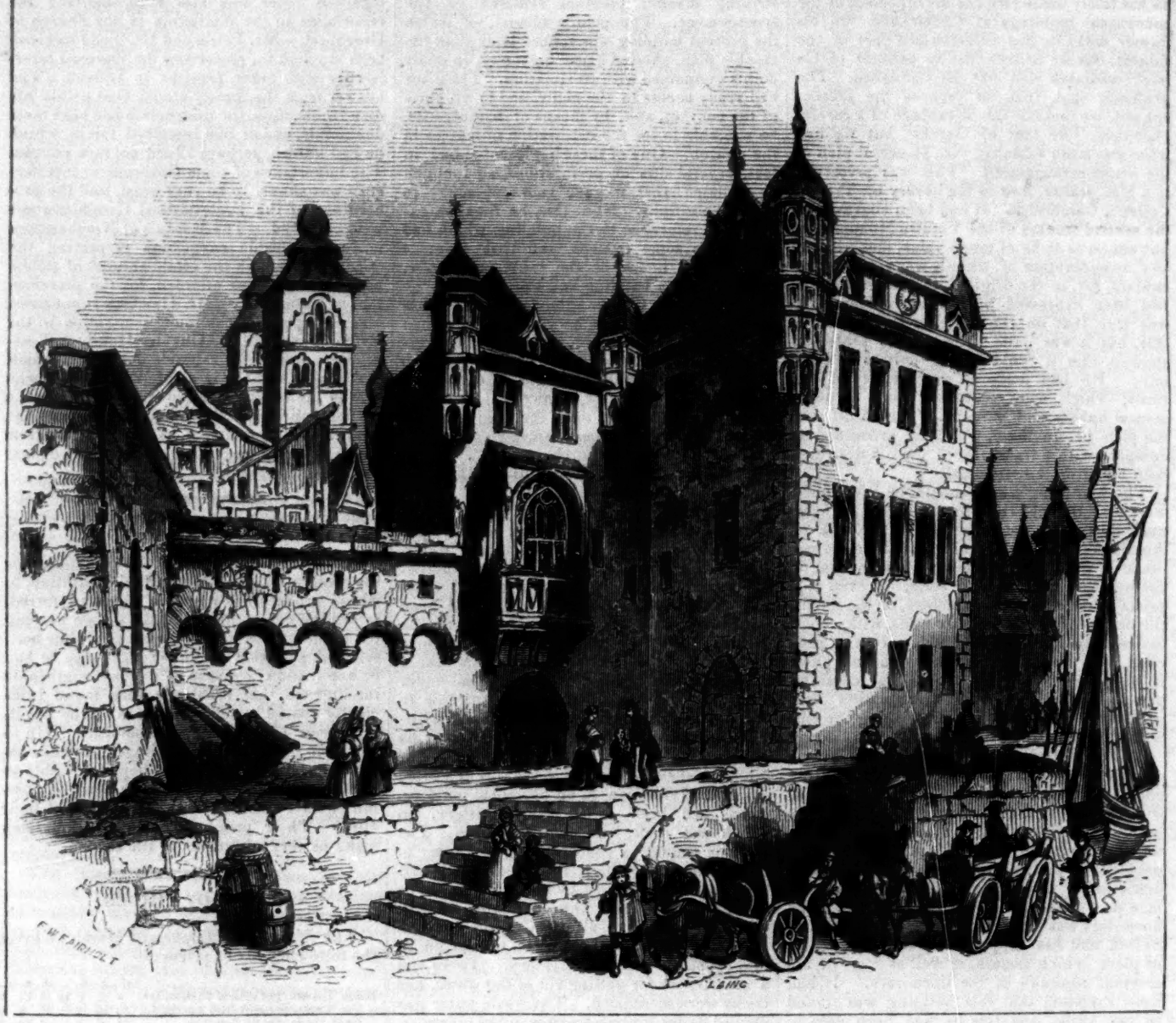
		£.	s.	d.		£.	s.	d.
Baltic Timber, per load of 50 cubic feet		4	0	0	to	4	12	6
Yw. Deals, per standard hundred		15	10	0	..	19	0	0
Deck Deals, per 40 feet 3 in.		1	5	0	..	1	10	0
Lathwood, per fm. of 4 feet		5	10	0	..	6	10	0
Petersburgh, Riga, and Archangel								
Yw. Deals, per stand. hundred		16	0	0	..	18	10	0
White		14	0	0	..	14	10	0
Yw. Battens		16	10	0	..	18	10	0
Riga Logs. for 18 feet cube		4	0	0	..	4	10	0
Swedish Timber, per load		3	5	0	..	3	10	0
Gothenb. Yw. Deals, p. 100 12ft. 3in. 9in.		25	0	0	..	27	10	0
White ditto		22	0	0	..	25	10	0
Yw. Battens, per hd. 12ft. 9½in. 7in.		14	10	0	..	17	0	0
Christ. Yw. Deals, per hd. 12ft. 3in. 9in.		22	0	0	..	26	0	0
White		27	10	0	..	28	0	0
Quebec and St. John's Spruce Deals per 100. 12ft. 3in. 9in		17	10	0	..	20	0	0
1st qual. yw. Pine Deals, per st. hd.		16	0	0	..	17	10	0
Second do. do.		13	10	0	..	13	10	0
Red Pine Deals, per hd. 12ft. 3in. 9in.		19	0	0	..	26	0	0
Red Pine Timber, per load		4	0	0	..	4	7	6
Yw. ditto		3	10	0	..	3	15	0
Birch ditto		3	15	0	..	4	0	0
Elm ditto		4	15	0	..	5	0	0
Oak ditto		6	0	0	..	7	0	0

MAHOGANY.

Mahogany,	St. Domingo	4½d.	to 1s. 9d.	per foot.
	Cuba	4	1 0	
	Honduras	4	1 2	
	African	4	0 5½	
Cedar	Havana	4	0 5	
Rosewood.	Rio	9l. 10s.	to 13l.	per ton.
	Bahia	9 10	19	

Consuming Smoke.—In proof of the increase of heat gained by burning the smoke, we may cite the experiment of Mr. Henry Holdsworth, of Manchester, who has shewn that in the front flue of a furnace, of common construction, the thermometer seldom rose above 1,100 degrees Fahrenheit, and often fell below 900 degrees, the mean being 975 degrees, while in the same furnace, when consuming its smoke, the mean temperature was 1,160 degrees Fahrenheit, ranging between 1,400 degrees and 1,000 degrees. The quantity of water evaporated by a pound of coal was *one-half quarter* more than when the smoke was not consumed.

ELECTORAL PALACE AT COBLENTZ.



THE ELECTORAL PALACE AT COBLENTZ.

The picturesque edifice which forms the subject of our engraving is adjacent to the Moselle bridge at Coblentz, and close to the confluence of that river and the Rhine. Its architecture is characterized by that freedom from strictness of style, and general adherence to rule, which marked the continental buildings of the latter end of the fifteenth century, and which allowed any combination of parts provided the general effect was gorgeous. Thus classic forms were tampered with and modified until they combined with the enrichments of the Gothic era, and a style bearing traces of multifarious parts borrowed from all sources, and fitly styled from its generalization of all—the *Renaissance*, was for a considerable period the favourite one adopted.

However much the artist may be pleased with the picturesque effects of such buildings, the architect but rarely applauds them, except when the style is used for buildings of a strictly decorative character, or for enriched interiors. Many of the details in the building here engraved are of much beauty. The bay window is exceedingly picturesque, and so are the turrets on the upper angles; such turrets are very common in Cologne, and some fine examples may be seen in the principal streets; they are frequently supported on arches springing from pillars standing free of the wall, their bases resting on sculptured corbels, and are very agreeable to the eye when they abut on the corners of streets, as they break that stiffness of line so common in those of our own country. They are remnants of a mode of building adopted in less secure times.

FREEMASONS OF THE CHURCH.

On Tuesday evening we attended a meeting of this society, in their rooms in Carlisle-street, Soho. Sir Walter James, Bart., was in the chair, and many curious works of art were exhibited. A paper, on the tomb of Robert Bruce, competitor for the crown of Scotland, by Mr. W. Downing Bruce, was read. The tomb was of a tabular form, of fine blue marble, and stood with the east end against a wall, probably near the high altar, in Gisborough Priory, Yorkshire. It had no recumbent figure upon it. The upper slab is now separated from the tomb, and used as the altar-table in the parish church; it is 9½ feet and 1 inch long, and 3 feet 9 inches broad, and 9 inches thick. The tomb in the centre is 8 feet 6 inches long, and 2 feet 2 inches high; the base, still attached to the tomb, is 10 inches thick. The west end, given by Dugdale, but now destroyed, represented the competitor in royal robes, with the Scottish crown on his head, having established his right to wear it; holding in his right hand a sceptre, and in his left a shield, bearing the royal arms of Scotland, a lion rampant within an orle floy counter-floy; and above him two shields, one the arms of the elder branch, resident at Skelton, the other, those of the Annandale family. The south and north sides were removed into the parish church, and fixed in the seats near the west door, one on each side the passage. At the rebuilding of the church, about sixty years ago, these remains of antiquity were built into the porch, or lower part of the tower; that which was the south part of the monument is on the north side, still fronting the south, and that which was on the north part, on the opposite side. On each side of the tomb are five large niches, trefoiled in the head, and slightly panelled at the back, in each of which is a figure in armour, holding a shield. Between the large niches are small ones, also trefoil headed, reaching two-thirds up the side, containing figures of ecclesiastics. Above each small niche is a shield. By the heads of the large niches are formed ten spandrils, filled with various devices. The figures contained in the small niches are much mutilated.

Mr. J. Wykeham Archer then read a very interesting paper on portions of ancient London, illustrative of a series of capital sketches, made by himself for Mr. Twopenny's collection: we shall give this in full in our next number.

The Chairman informed the meeting, that in consequence of steps taken by the college, the ancient iron railing, belonging to certain tombs in Westminster Abbey, was to be put up again. The Honorary Secretary, Mr. W. P. Griffith, having announced a paper on masonry, by Mr. Mallcott, the meeting was adjourned.

The Army and Navy Club Competition.—In reply to several correspondents, who consider a circular recently issued by the committee somewhat ambiguous, we have enabled ourselves to state, that the elevations are to be in outline only, as specified in the first conditions. The perspective view may be tinted in Indian ink or sepia. The object of the circular is to prevent the execution of perspective views in colours, as such will not be admissible.

BUILDINGS IN YORK.*

OUSE BRIDGE AND ST. WILLIAM'S CHAPEL, YORK.

BOOTHAM BAR.

MONK BAR.

MICKLEGATE BAR.

* See p. 117, in present number.

AWARDS OF OFFICIAL REFEREES.

RECOVERY OF COST OF REBUILDING PARTY-WALLS. IMPORTANT.

A CERTAIN party-wall on the line of junction between Nos. 8 and 9, Cullum-street, in the district of the eastern division of the City of London, having been rebuilt, in pursuance of a former award, under the direction of Mr. Barnes, the account was rendered to Mr. Archer, the occupier of No. 9 (who holds on lease for twenty-one years, from Christmas, 1830), and he, objecting to it, appealed against it to the referees on the following grounds:—

"1. Because the said party-wall is not erected in conformity with the said Act.

2. Because the accounts delivered are contrary to the said Act.

3. Because the claim for the same is contrary to the award made by the official referees in reference to the said wall, dated 17th day of July, 1846.

4. Because the rules of the said Act were not complied with in the condemnation of the original wall, and no directions contained as to the manner of execution.

5. Because if I, the said James Archer, am liable to any of the expenses of the erection of the said wall, I submit I am not liable to the whole of the moiety thereof, but the owners or lessors to some portion of the same.

6. Because the said William Barnes, as such agent as aforesaid, or the building owner or owners, have not complied with the said Act."

The referees, on survey, ascertained that the house No. 9, Cullum-street, exceeded six squares in area, and was consequently a building of the second rate of the first class, and that the thickness of the wall in question was contrary to the rules of schedule C, part 2, and that a chimney breast next the said house was corbelled out from the faces of such wall more than nine inches, contrary to the rules of schedule F, relative to the construction of chimneys, and that certain joists and girders had been placed within 8½ inches from the chimney openings in the said party-wall, also contrary to the rules of the said schedule F; and that a small opening or hole had been made in the said wall, above the gutter at the back of the said house, No. 8, Cullum-street, contrary to the rules of schedule D, part 3.

The award was:—That as the said party-wall had not been built in the manner and of the thicknesses required by the first-mentioned Act in reference thereto; "it is not lawful for the building owner at whose expense such work has been executed to claim, and he is not entitled to be paid, or to recover from the adjoining owner, any compensation in respect thereof within the intent and meaning of the statute in that behalf."

The expenses to be paid by Mr. Barnes.

RUINOUS PARTY-WALLS—FORMS NOT TO BE DISPENSED WITH.

A party-wall between No. 1, Lothbury, and the remains of the building situate on the south side of it, in the Old Jewry, having been condemned by the district surveyor as unsafe, Messrs. Stevens and Co., owners of No. 1, were desirous to avoid delay, and to pull down and rebuild the wall at once, but the governors of the Bank of England, owners of the premises in the Old Jewry, refused to assent.

A requisition on the part of Messrs. Stevens was therefore presented to the referees, requesting them to determine,

"1stly. Whether the said governor and company refusing all consents, the said Messrs. Stevens and Company will be justified in proceeding forthwith to pull down and rebuild the said party-wall on the present line of junction, and also whether in case they may so pull down and rebuild, they may enter upon the premises of the adjoining owners for this purpose, and in the event of their being allowed so to pull down and rebuild, and having so done, they would be entitled to claim and be repaid by the adjoining owners, a moiety or any other proportion of the expenses of pulling down and rebuilding, and the other expenses incidental thereto.

2ndly. Whether the said Messrs. Stevens and Company may forthwith pull down the said party-walls; and having so done, or in the event of the said wall having been pulled down in pursuance of the 40th section of the said Act, the said Messrs. Stevens and Company would be justified in forthwith proceeding to build a proper external wall up to the line of junction of the two premises, with the footings on the ground of the adjoining owner; and, also, whether in this case the said Messrs. Stevens and Company, in so building, would have a right to enter upon such adjoining owners' ground for the purpose of building such external wall.

The referees decided:—

"As to the first question submitted by the said requisition—

First. That inasmuch as the party-wall in that question mentioned has, by the certificate of the surveyor of the district (duly appointed and acting under the first-mentioned Act), by him duly made under and in pursuance of the 40th section of that Act, been declared to be ruinous and dangerous, and that it is necessary for the safety of passengers that the same should be pulled down; and inasmuch as the said Messrs. Stevens and Company have been required by the lord mayor and aldermen of the city of London to pull down the same under and in pursuance of the section last aforesaid, they, the said Messrs. Stevens and Company, would, if the said governor and company of the Bank of England, or other the owner or owners, for the time being, of the said premises, situate and being in the Old Jewry aforesaid, refuse to join in such reparation of the said party-wall as may be necessary for the securing the safety of passengers, or in pulling down the same, after the giving of such reasonable notice, by the said Messrs. Stevens and Company to the said governor and company, or other the owner and owners for the time being, as last aforesaid, as the urgency of the case may admit, be authorised in proceeding to pull down the said party-wall without the consent of the said governor and company, or other the owner or owners, as last aforesaid, *but not further or otherwise than may be necessary to remove all danger to passengers*; and that, subject to such conditions, the said Messrs. Stevens and Company may enter the said premises last aforesaid for the purpose of pulling down the said wall.

Secondly. But inasmuch as the proceedings, authorized by the 40th section of the first-mentioned Act, are such only as may be necessary for the safety of passengers, the said Messrs. Stevens and Company would not, in case the said party-wall should be pulled down, be justified in proceeding to build the same on the present line of junction referred to in the said requisition, until the said governor and company, or other the owner or owners for the time being, of the last-mentioned premises, shall have consented thereto, or until such proceedings shall have been taken as are prescribed by the first-mentioned Act for supplying the want of such consent.

And, further, as to the said first question, that in case the said party-wall be pulled down by the said Messrs. Stevens and Company, they would, after such refusal and the giving and expiration of such notice, as is first above-mentioned, be entitled to claim from, and be repaid by, the said governor and company, or other the owner or owners for the time being, of the said last-mentioned premises, a proportion (which may depend upon circumstances) of the expense of pulling down the said party-wall; but that the said Messrs. Stevens and Company would not be entitled to claim from, or to be repaid by, the said governor and company, or other the owner and owners for the time being, of the last-mentioned premises, any of the expenses of rebuilding the said party-wall, unless, previously to such rebuilding, the said governor and company, or other the owner or owners last aforesaid, shall have consented thereto, or unless such proceedings shall have been taken as are prescribed by the said first-mentioned Act for supplying the want of such consent.

And as to the second question submitted by the said requisition, we, the undersigned, as such official referees as aforesaid, do hereby determine and award, that neither of the said Acts of Parliament contains any provision relative to the building of external walls under the circumstances stated in the last-mentioned question; and that the said Messrs. Stevens and Company would not be justified in placing the footings, or other parts of any external wall, upon the ground belonging to any other owner, nor in entering upon such ground without the consent of such owner first had and obtained in that behalf."

PROCEEDINGS OF THE INSTITUTE OF FINE ARTS.

SIR,—The Institute of the Fine Arts, founded in 1843, in order to repair the long continued neglect of sound principles, business habits, mutual information and improvement, and concentration of power, without which artists, as a body, never can enjoy the respect and influence that seem naturally to belong to the profession,—appeared in many respects well calculated to effect its purpose; but the commotions that during the last twelve months have shaken it to the foundation, not only stop its progress and impair its efficiency, but the abandonment of original principles, confusion, loss of time and of money, are seriously aggravated by the disunion and animosity amongst individuals who formerly entertained esteem for each other. The following account of the circumstances by one who, as an efficient member of council, of the Finance Committee, of that on laws, &c., &c., an untiring advocate of the high principles of the society and the rights and interests of all its members, may perhaps open the eyes of sensible men to the folly of exasperation, and serve as an example to others, particularly to young institutions.

Two great mistakes were made in the formation of the society. First, while they invited amateurs to join as "Honorary paying members," they denied them all share in the management of funds to which they contributed, all participation in the election of friends or others, or the business of the society; and so jealously have they maintained this exclusion, that a proposal to modify it, still keeping them from the council, was rejected, and a motion at a general meeting to refer the differences of the late contending parties to umpires, more impartial and cool than ourselves, was vehemently resisted, and declared by the chairman to be irregular and unconstitutional. The other mistake was, in having so large a number as twenty-four members of council in a society where a hundred never meet on any business; under such circumstances, a compact body of more than a fourth, prepared and used to each other, can overpower all uncombined opposition or difference of opinion.

The consequences of excluding gentlemen better acquainted than they are with forms and business are frequent and serious, and preclude their finding out mistakes until too late for remedy. A few cases will suffice.

According to the printed laws, a banker should be appointed by the general meeting to receive all moneys, to be drawn by checks, signed by the treasurer and the secretary. Audits should be made every six months: and yet in four years no banker has been appointed, and only two audits have been made and signed. Hence an accumulated confusion, which makes it hardly safe to rely on those statements to any nicety. For instance, when in 1845 the auditors undertook to examine papers, no balance-sheet being prepared, and no dates, even to distinguish one year from the other, it was next to impossible to clear them. This was commented on in the report. According to the constitutional law IX., the report on that audit was ordered to be printed for members, but it never has been sent to press.

From February, 1845, to February, 1847, there was not one audit, although one of the auditors repeatedly claimed to be summoned, but a finance committee was appointed by the council in 1845, and a committee of inquiry by a general meeting in 1846. The former spent several months in making up and checking a register of members and payments of subscriptions, discovered endless confusion in the accounts, but could not establish a satisfactory mode of keeping them; but they and their friends on the council were indignant at the general body appointing a committee of inquiry, and actually questioned its right to do so, maintaining that they alone (the council) had that power; they prevented the report of the committee from being read at a subsequent meeting. The committee of inquiry then took away the papers in their hands, and printed a statement, in which they advised members to insist on an audit before they paid their subscriptions. For this the council members

caused the chairman and secretary of that committee to be expelled, and refused, as above stated, to submit the difference to unbiassed arbitrators. They also passed the law for doubling the subscription. These extreme measures put an end to all hopes; but too late, the council paid for legal advice as to their power of calling for the double subscription for that year, and were obliged to abandon it. They had already agreed to absorb the club (an anomalous adjunct to the institute) assets, liabilities, and stock, into the society, and they were soon obliged to borrow 100*l.* to carry on the establishment. These measures were resorted to without communicating with the members at large, or mentioning them until the close of the year. Notwithstanding the lengthened attempts of the finance committee to clear up the accounts, they were obliged to place them in the hands of an accountant, who, for six pounds, made out a balance-sheet. This was received, and ordered to be printed at a general meeting; and though unaudited, considered by the treasurer as still more authentic than an audit; and last week the auditors were directed to commence their examination, not from the beginning of the year, but from the conclusion of that accountant's statement. Then, for the first time, it was discovered that this important document was neither signed nor dated, having no date to determine the period of its close. Indeed, after all the trouble to set them right, they were nearly in the same state of confusion in 1847 as in 1845: not even a cash-book was kept. It is hoped, that doubling the subscription will set all to right; as if it was easier to collect accumulated arrears by adding another guinea. And amid all this, members of council claim an allowance of refreshments when employed in committees, a great encouragement to late hours, little business, and good appetites. When will our artists acquire noble aspirations, and learn that good sense and knowledge are the fit companions to genius, even in its most exalted flights to pure etherial regions? That good feeling towards each other, and due respect for all men of intellectual pursuits, without exclusive jealousy, is required to gain them a position as amiable and educated men. Let them shew less rancour for past differences. A little conciliatory amenity would do the institute more service than unwarrantably placing an odious stigma on opponents. Revenge usually belongs to savages and brutes,—good-will towards a powerful rival always ensures esteem. Even now they should submit their differences to impartial arbitrators, afford every advantage and respect to gentlemen of different acquirements, from whom they have fully as much to learn as they can impart; and if the alterations in the society cause some of us to separate, let us rather regret than rejoice at the parting. The social character has so nearly superseded the intellectual, that one, more like various societies for the promotion of science, might be established with perfect good will. Emulation might then replace jealous animosity, and, instead of violent expulsions, give rise to cordial invitations. Surely, in an age so remarkable for improvements, artists cannot long resist the many calls on their better sense, their real interests, and generous feelings.

I remain, Sir, &c., GEORGE FOGGO.
March 2nd, 1847.

ENCAUSTIC TILES.—Encaustic tiles, as many are, doubtless, aware, consist of a fictile material, made into forms of about 6 inches square, into the surface of which, while still in a soft state, were pressed metal dies, upon which a pattern was worked in relief: the ornament being thus indented, the intaglio, or indentation, was filled up with clay of a different colour. The tile was then baked, and covered with a vitreous glaze. This art obtained universally in England from about 1300 to 1500; and was again revived in 1830, when a patent was taken out for the manufacture of similar tiles: since which period, the revival has been carried out on a large scale by many manufacturers. They are sometimes improperly designated Norman tiles: the manufacture was carried on more extensively in England than in any other country.

INTRA-MURAL BURIALS.—Government have prepared a bill to prohibit the further interment of corpses in the churchyards of large towns and populous districts.

SEA WALLS.

AT a meeting of the Institution of Civil Engineers, on the 2nd instant, the comparative advantages and disadvantages of vertical and sloping sea walls were discussed, and instances were given of the effect of seas upon the former, when walls of a certain batter, or curved face, were surmounted by an overhanging coping, of such extent as to deflect the curling wave outwards, and throw it back upon itself, rather than allow it to fall bodily inwards, as in the case of the Penmaenmawr wall. The manner in which the waves were driven up long slopes, acquiring force as they travelled along, was contrasted with this. On the other hand, the action of the various kinds of waves was shewn upon sections of the beach at Madras, where the surf was so notoriously bad, and where it appeared, that by the clawing off of the waves, the beach was washed away into natural steps, of a level, and then a small slope of 45°. A breakwater had been formed off that beach, by throwing in loose masses of rock, forming their own slope; this, when carried up to within 10 feet of the water level, stood well.

In Knootker Sound the same effect of the drawback of the waves was noticed. Sections of the mole of Venice were shewn. That mole, which is nearly sixteen miles in extent, had a section of a sloped foreshore, with a nearly vertical wall, then a slope at another angle, and above high-water mark another nearly vertical wall. When the seas rolled in upon the mole, they partially curled over against the first wall, and were projected with augmented force against the upper one. The consequence was, that the mole was partially destroyed; and in the repairs, which had been executing for some time past, it had been reduced to one uniform sloped face, at an angle of about 15°. The destruction of the nearly vertical walls of Portpatrick was also noticed. Those walls, although constructed of the finest Anglesea lime-stone, well dressed, dovetailed, and tied down vertically and horizontally by iron chain-bonds, were completely overthrown, and, until the thickness of the wall was increased to 80 feet of solid material, it could not be made to stand. The situation was extremely exposed, and the sea frequently sprung 50 feet above the top of the lighthouse, which was itself 60 feet above the level of high water of spring tides.

The causes of the peculiar action of the drawback of the waves, as exemplified by the removed shingle from the beach when the wind was on shore, and its accumulation when the wind blew off shore, were also discussed, and it appeared to be the received opinion that in these cases, the upper part of the waves being acted upon by the wind, a peculiar rolling motion in a counter direction was imparted to the lower wave, which acted upon the shingle in the manner alluded to. This action appeared, however, only to extend to a depth of about 9 feet, which it seemed to be agreed was the ultimate depth of detrimental action of all waves. The effect of advanced groynes in protecting sea walls was exemplified by the concrete walls at Brighton and Dover, which were intended merely for retaining walls, and such was the effect of the groynes, that since they had been put down, the shingle had accumulated to such an extent, that the sea did not approach injuriously to within 100 feet of the base.

ELECTRO-TELEGRAPHIC PROGRESS.—The American editor who memoralised Congress for an appropriation, for the construction of a line of telegraphic wires across the Atlantic, "proposes to carry the necessary wire on board a number of steam-ships, and to run it off from a spool in the wake of one of the steamers. He thinks the wire, of its own weight, will sink down to a point where, from the solidity of the water, it will remain in suspension, being, at the same time, below the line of travel of the monsters of the deep and the action of the currents of the sea." The idea, however startling and preposterous, has not now the merit of entire novelty, as it was started at least a twelvemonth since.

STATUE OF REMBRANDT.—We learn from Amsterdam that a colossal statue of Rembrandt has been modelled by Roojer, a young Dutch sculptor, and is about to be cast in bronze and set up in that city. Our informant speaks well of it.

THE STONE AND TIMBER OF NEW SOUTH WALES.

THE deserving efforts lately made by the New Zealand Company, to introduce into this country the ornamental woods of the colony, and to which we have already drawn attention, reminds us, that the vast extent of New South Wales conceals equal, if not superior resources for our national industry and art. We have come to know, that there grow in the latter country more than 150 species of *Eucalyptus*, many not branching off but at a height of 60 feet; some of those called in the colony *blue bark* will doubtless be of superior use in many respects. The genera *Callystris*, Callycoma, &c., conceal wood of a superior description for either building or ornamental purposes, while *iron wood* (Casuarina), forests of which are scattered over the whole extent of New Holland, yields a timber of an indestructible character. Transgressing from these vegetable riches to the mineral, we shall find them still more promising. Not to mention the gold, lead, and copper of South Australia—*structural* and ornamental minerals abound in New South Wales; as for instance the *marbles* of the county of Argyle, which are of five or six various colours and designs. But, if this country should ever require huge monolith columns and pilasters of sienite, porphyry, or granite—there they are, at a short distance from Two-fold Bay: whole mountains and tracts of mountains, out of which slabs and blocks of tremendous size could be easily cut. A collection of specimens of the kind, made by us, has been acquired by the trustees of the British Museum, and is to be found in their collections. An attempt was made some years since, to ship *sand* from Sydney for making glass! We hope, however, that at the industrial exhibition of the British Empire (when we have it), our colonists in Australia and elsewhere will send us *also* samples of their structural products.

NOTES IN THE PROVINCES.

THE question of the rebuilding or altering of the Worcester City Prison has been referred to a committee. The cost of a new prison has been estimated at 7,000*l.*; but the present jail cost nearly 20,000*l.* The question of the proposed new corn-market has also been referred to a committee.——The new church lately erected in the parish of Quarry Bank, Staffordshire, was consecrated on Tuesday week. It is said to be a spacious structure, with seats mostly free.——The propriety of lighting Stratford and Westham with gas is to be forthwith submitted to a vestry meeting. Most of the thoroughfares of the extensive parish of Westham, it seems, is even without the ordinary street oil-lamps, while a rate of one penny a pound would be sufficient to light the whole with gas.——The contract for building the cheese market-house, &c., at Melksham, was taken yesterday by Mr. Jones, of Bradford, for 2,448*l.* The works are to be completed in six months.——The inhabitants of Scarborough have determined to have the price of their gas reduced.——We some time since slightly animadverted on the impropriety of the Hull Water-works Company usurping the functions of the medical faculty, by a wholesale administration of those aperient and other sulphates and chlorides, which form the saline solution of the ocean. An occasional dose of these would have probably done little harm, but a determined *course* of such ultra-alteratives, persevered in down to the present moment, is more than we were prepared to anticipate, and comes to be a serious matter. It appears indeed,—in fact it was chemically demonstrated on Monday week, in course of an instructive and appropriate lecture, on "Common salt and the salt mines of Cheshire," by Mr. William Sharp, F.R.S., delivered to the Hull Literary and Philosophical Society,—that the inhabitants of Hull have no less than two tons of sea salt administered to them through the water-works every day—at least that this tolerable quantity had been incidentally prescribed to the community on the day before the lecture. A 'warm discussion' ensued on this 'interesting' announcement. ——The New Water Company at Sunderland have taken possession of the works of the old company. The post-office there is to be altered and made more commodious. A strike

of masons and bricklayers to obtain 4s. 6d. a day, and to leave work at 4 o'clock on Saturdays, took place at Sunderland on the 1st of March, and was shortly afterwards announced by advertisement on behalf of the workmen. ——The demands of the operative masons on the Kendal and Windermere Railway have been conceded, the state of the works urgently requiring a cessation of the strike. The navigators on the same line, too, struck work for 3d. a day additional wages, but failed, and many of them were dispensed with altogether. —— It was stated by Mr. Labouchere, the other day, in the Commons, that the number of able-bodied men employed on the Irish relief works, chiefly unproductive, and at least not reproductive, has increased to 668,000. ——Government is said to have given orders to build a new model prison, near Dublin, for the reception of Irish convicts. It is to be constructed on the plan of the new Pentonville prison, and is to have 500 cells for the reception of prisoners.

SUPPLY OF WATER TO EXTINGUISH FIRES.

Hose and jet-pipes fixed upon the pipes laid for the supply of water, being under experiment at Liverpool for extinguishing fire, communication of the fact that a similar system has been in successful use, in her Majesty's dockyard at Portsmouth, for between forty and fifty years, may serve to confirm the ideas entertained of advantages derivable from the supposed innovation.

Very early after Brigadier-General Sir Samuel Bentham had been appointed Inspector-General of Naval Works, he contemplated the introduction into the Royal dockyards of efficient apparatus for better securing them against the ravages of fire, and, December, 1797, proposed to the Admiralty the erection of a steam-engine in Portsmouth dockyard, and in connection with it, a system of pipes and other works for the distribution of water and the extinction of fire, which works were accordingly executed. The following abstracted account of them was furnished to their lordships.

Water-Works and Fire-Extinguishing-Apparatus.—"This apparatus, as exemplified at Portsmouth, consists of an elevated reservoir, into which the water from the above-mentioned well is raised during meal hours and in the evening, by either of two steam-engines in daily use in the wood mills. From this reservoir the water is distributed throughout the dock-yard, by a system of pipes passing by all the principal buildings, and by the sides of the docks and the jetties; upon these pipes, at intervals of from about 50 to 200 feet, means are provided for speedily affixing fire-hose, and branch pipes; and the system of pipes is so arranged, as that water flows through them to any given point by two different courses, so that though there should happen any temporary interruption, by sudden bursting of a pipe, or other derangement, in one course, the supply of water at any point would be effected by the other course. In addition to this supply, always ready to be instantaneously applied to the extinguishing fire in any part of the dock yard, and with a force sufficient to throw water into the first floors of buildings, means are provided of raising by either one of the above-mentioned steam engines, either fresh water from the well, or an immense supply of sea water, and of *forcing* this water, fresh or salt, in cases of fire, *into* and *over* all the principal store-houses and buildings, as well as over the ships themselves lying within, or contiguous to the limits of the dock yard."

"Apparatus to the same effect are introducing into most of the other dockyards."

To this account should be added, that in the wood mills, where the materials used, and the refuse from the works are so inflammable, Sir Samuel caused pipes, with suitable hose and jets, to be introduced into every floor, so as to have means on the spot of throwing water to any part of the room where fire might appear, a provision applicable not only to workshops, but, with suitable modifications, equally so to museums, libraries, picture galleries, indeed, it may be said even to private habitations.

Examples have not been wanting of the efficacy of those arrangements in the royal dockyards, as in the instance of a threatening fire, but soon extinguished, in the metal mills at Portsmouth, and in the year 1811 in the ropery at Plymouth, where the conflagration was arrested by them, although the works were yet only very partially executed.

Sir Samuel Bentham, after the abolition of his office, was for some years absent from this country. On his return, several appalling conflagrations in the metropolis drew his attention to the means the water already laid on afforded for extinguishing fire; and he drew up, February, 1830, a paper, in which were detailed some modifications of his above-mentioned arrangements, so as to suit them to the existing water-works in London and Westminster. This paper was intended for Sir Robert Peel; but it appearing that the public mind was not at that time ripe for the adoption of any such general measure, the project was communicated only to friends; however, early in the year 1844 it was submitted to the consideration of the Earl of Lincoln.

Neither the notoriety of the works for extinguishing fire in the royal dockyards, nor the particulars afforded in that paper, have as yet induced either ministers, the insurance companies, or any private engineer to apply the same principles to the metropolis. It may be hoped the example afforded at Liverpool will have better success. M. S. B.

ARCHITECTURAL SCHOOL OF DESIGN.

A general meeting of the Association of Architectural Draughtsmen was held on the 3rd inst., at their rooms, 33, Southampton-street, for the purpose of embodying the "School of Design" in connection with their association. The secretary read the minutes of the previous meeting, to explain to the visitors the part the society intended to take in assisting to carry out such a scheme. First, by the immediate reduction of their annual subscription and entrance-fee to one-half. Secondly, the abolition of all fines. Thirdly, to make all drawings to the portfolio optional. And, lastly, to form classes among the members for the more perfect study of design.

A long discussion ensued relative to the best mode of carrying out the "School of Design," some gentlemen present refusing to co-operate with the association until the working of the schools should be more definitely fixed. It was explained that the object was (in accordance with a paper by Mr. Kerr), to form a society upon an enlarged scale, with a comparatively trifling subscription, that might induce every student of the art to avail himself of its privileges; this purpose, it was thought, had been fully carried out by the amended rules, as read before them that evening, and that it now only remained for the profession generally to carry the scheme fully into operation, by becoming members of the association, and placing the working of the schools in some definite form. Several gentlemen then offered themselves for election, and a sub-committee of the association was appointed, consisting of five members, to meet a deputation of the newly-proposed members, to arrange at once upon the actual working of the new schools.

ART IN ROME.

Amongst the greater works now ready, is a splendid classic marble group by the sculptor Mr. Emil Wolff, for the Armoury-bridge (*Zeüghausbrücke*) of Berlin. Victory pointing out to an adolescent the deeds of brave country-defenders, and spurring him to similar acts. The artist has embodied the whole of the thought, by inscribing the names of worthy warriors on a shield, which the goddess shews to her favourite. The execution has been well calculated for the broad daylight, in which the work is to be placed in the Prussian capital—the artist well *knowing* that, in that case, the contour will dwindle and shrink, if not boldly and grandly laid out.—Another huge work is Perseus, by Mr. Froschel, ordered by Princess Charlotte of Prussia for her Villa Sommarina, at Rome.

The senior of German—nay, European painters, Mr. Reinhard, 85 years old, has surprised the world by the exhibition of a painting, just completed, being an allegory of the discovery of the Corinthian capital! It is by such episodes and allegories, that Mr. R. contrives to impart great interest to his landscapes. By the aid of the present episode we know at once that we are at Corinth, that scene of so much human greatness and illustration; a scenery viewed quite differently from those common-place localities, beauteous, howbeit, in other respects, passed over indifferently by human steps. Mr. Reinhard, well knowing what lesson he thereby gives to his younger followers (*festina lentè*), has inscribed his age in a corner of this picture.

EXCHANGE OF OPINIONS AND INFORMATION BENEFICIAL TO ART.*

Men, in whatever station, who shrink from intellectual communication, have seldom much to contribute. Jealousy originates in ignorance, and in the pre-supposition of complete wisdom being already possessed; not considering that knowledge has the power of boundless self-extension—each accession discovering but a new series of unattained and beautiful developments. The inducing free expression of individual opinion, whether upon the history and progress of manufactures, mechanical ingenuity, or the ornamental taste displayed, must materially tend to promote useful and intelligent inquiry, and bring out knowledge that has long been without opportunity of encouragement, and lying dormant. There cannot be a doubt but that the deficiency of opportunities for exchanging information and observation, has retarded the individual and public advancement of a true feeling for the beautiful. When rightly pursued, the resources of art are inexhaustible; becoming more prolific as they are better understood: render art popular, and the demand for embellishment increases—simply because it then arises from a whole people, and not a limited few.

The mighty difference between the state of industrial art in this country and upon the continent, proceeds from our viewing it apart from education, and as a mere matter of mercantile traffic, whereby to make money; whereas one great purpose of art is to improve and delight the understanding—through the eye to exalt the mind, and extend the joys of refined acquirements to every rank of life. Thus we find continental nations cultivating an acquaintance with art for the enjoyment it is known to diffuse; each town possessing its humble museum and gallery of sculpture, whose visitors are its artisans. All are sensible that the more intelligent of our own workmen are acquiring an improved taste; and, at an early day, may hope they will discover, that, instead of a line of demarcation existing between the practice of the industrial arts and those recognised as high art, an indissoluble bond connects them conjointly to prosperity. The superb remains of Grecian art, and in later days, of Italian, testify to the full appreciation of this truth. Their people grew up surrounded by creations of the most sublime nature; they became imbued—self-educated, in the contemplation of the beautiful; and being familiar with productions of the most refined taste, they unconsciously extended the feeling over all the ordinary requirements of life.

Rules and instructions may be laid down for the production of agreeable form and systematic colouring: but as a matter of ordinary occurrence, the greater or lesser success must depend upon the individual experience, capability, or genius, in applying the unerring principles of fine art to the ever-varying circumstances of industrial art. Extended research and observation will enable the mind so to adapt embellishment to the circumstances of varied locality or material, that plagiarism and mannerism will yield place to elegant diversity.

The grand treatment of line, and the masterly combination of style and effect exhibited upon much cabinet work of the olden time, prove, in conjunction with the products of the

* From an address to the Decorative Art Society by Mr. Crabb, accompanying abstracts of the transactions from January 1844 to January 1846. This society was formed in the autumn of 1843, by a few persons connected with cabinet and decorative work, for the purpose of promoting beneficial inquiries, classifying information, obtaining catalogued lists of the dates, styles, and best engraved examples of the most distinguished authorities upon applied decorations—either architectural, or as useful to manufacturing art. They have pursued their object very ably (especially when the limited time at the disposal of the members is remembered), and will, we trust, continue to do so. An accession of active members is sought for.

loom, the impress both are capable of receiving; while the magnificent arabesques of Italy, disposed in every combination that can delight the eye and interest the understanding, place decorative art far above the position usually assigned to it. Design, in form or colour, is the foundation of all this, and greater excellence; while the latter is fully capable of bestowing a finishing charm on the skilful arrangements of the architect, or through the instrumentality of ignorant or indifferent tradesmen, become the means of destroying the ultimate effect of his best efforts.

New Books.

The Works of Josephus. A New Translation by Dr. Traill. London: Houlston and Stoneman.

A new translation of Josephus was much needed and will be appreciated, we doubt not, by the reading public. What especially recommends this edition to our notice is the circumstance that the twelve parts, in which will appear his Life, the Jewish War, and the two books against Apion, will be illustrated by one hundred engravings from drawings by Mr. Tipping of scenes, buildings, sculpture, &c., illustrative of the history, with descriptive notes. "In no ancient city perhaps—not even in Rome, and not in Athens—are the architectural remains of remote ages so confusedly blended as we find them in Jerusalem; for in very many cases what is unquestionably the work of a later age, Saracenic, Norman, Turkish, takes up and *embeds* the materials of an earlier time; nor are the instances rare in which large masses of materials, exhibiting traces of the arts, the resources, and the wealth of a primeval prosperity, have, as often as three or four times, and at the interval of centuries, been dislodged—have lain long in chaotic ruins; and then, and by rude hands, or in the hurry of distracted times, have been lifted anew into form, and lodged upon their first foundations." It may be expected that the illustrations to be given in this work will tend to the solution of some of these chronological problems.

Correspondence.

PRESSURE OF WATER IN MAINS—FILTER.

Sir,—Would it not be an assistance to those persons who may wish to adopt the plan of extinguishing fire by means of jets from hose attached to their water mains, if more particulars could be obtained as to the various heights of pressure, and their results in the late experiment made at Liverpool? and also what is the best method of attaching the hose for that purpose?

Can any of your correspondents inform me what is the description of filterer recommended by the Health of Towns Commission, or what is the best mode of making filter beds for large quantities of water?—I am, Sir, &c.,

One interested in the same.

The Theatre at Carlsruhe Burnt.—The grand Ducal Theatre at Carlsruhe has just shared what appears to be the inevitable fate of all theatres. How is this frequent evil to be remedied. If theatres must be full of combustible frippery, might not these be dipped in alum or other proper solution, to render them incombustible? Some hangings in the present instance were caught in the flame of the gas, and of course, rapidly communicated the fire to other equally combustible materials, so that had the hangings and canvasses in this case been saturated in the cheap and simple way so often pointed out, this theatre might have been still entire, and the loss it appears of many lives avoided.

The Protestant Church on Mount Zion.—In our notice of Brunetti's model, we spoke of Mr. Johns as the architect of the new church in Jerusalem. We have since been reminded that Mr. Habershon is the architect now employed there, and that "the roof may be seen slated, with part of the ceiling and ornaments (as it will be when finished), on the premises of Mr. Howard, builder, Newington Causeway. The whole of the fittings will be ready to sail in a month or six weeks."

Miscellanea.

Manufacture of Roman Mosaics.—Mr. D. Wyatt, in his paper "On the Art of Mosaic," recently alluded to, thus describes the manufacture of Roman Mosaics:—A plate, generally of metal, of the size of the picture to be copied, is first surrounded by a margin, about ¼ of an inch from its surface. This is then covered over with a coating of perhaps ¼ of an inch in thickness of mastic cement, composed of powdered Travertine stone, lime, and linseed oil. This is, when set, entirely covered with plaster of Paris, rising to a level with the surrounding margin, which is intended to be exactly that of the finished mosaic. On this is traced a very careful outline of the picture to be copied; and, with a fine chisel, just as much is removed, from time to time, as will admit of the insertion of the little pieces of glass mosaic—or, as the Italians call it, "smalto." This smalto is composed of glass, and is made in rounds, about 6 or 8 inches in diameter, and ¼ an inch thick. The workman then proceeds to select from the great depository, wherein are preserved, in trays, nearly 10,000 varieties of colour, those he may require,—which he then works to the necessary shape. This is done by striking the smalto with a sharp-edged hammer, directly over a similar edge, placed vertically beneath. The concussion breaks the smalto to very nearly the shape required; and it is then more perfectly ground, by application to a lead wheel covered with emery powder. The piece thus shaped is then moistened with a little cement, and bedded in its proper situation; and so on, until the picture is finished; when the whole is ground down to an even face, and polished. Six regularly instructed artists are now constantly employed in the Fabrica, at the Vatican.

Alleged Mis-management of Public Works.—The *Sligo Champion* declares that "the Board of Works is humbugged, the Government cheated, the poor defrauded," while the off-shoots of a mean and broken down gentry are enjoying the fat of the spoil,—the lion's share. These startling and wholesale allegations, however, are somewhat inconsistent with the statistical response of Mr. Labouchere, in the Commons, last week, that, "during the last month, from 19,000 to 22,000 labourers had been employed at an expense, for work, of 27,877*l.*, while the expenses of the staff amounted to only 2,110*l.*" The state of matters in the county of Sligo, however, may not be fairly represented on either side in these statements; but there is in all probability more truth in the declaration of the *Sligo Champion* of the poor, that "ten years of continued prosperity will not revive the manly spirit of independence which formerly existed," and that, in truth, the spirit of paupery is becoming wide spread and national. In many instances, too, wages of 8d. a day are said to be so long withheld, that the labourers sink exhausted by the way-side, and die Government creditors, a state of things certainly very disgraceful, and inconsistent with the beneficent intentions at least of the Government.

Buddhist Architecture.—At a recent meeting of the Asiatic Society, part of a letter was read from Captain Kittoe, who had been making some recent antiquarian researches about Gyah, anciently one of the seats of Buddhism. Captain Kittoe states that he was unsuccessful in his search after remains of Buddhist architecture—having met with but few fragments; but he found a number of small sculptured stones, which he thought were miniature *Chaityas*, or shrines. The base is a cube, the upper plane surmounted by a hemisphere, from the apex of which rises an obelisk. In each of the four vertical faces is a compartment containing a figure of Buddha. Captain Kittoe states that they resemble closely the pagoda at Rangoon, where five hairs of Buddha are kept as relics. Many of them are of elaborate workmanship. Captain Kittoe believes the present temple at Gyah to be less than 600 years old, and to have been built for the joint worship of Siva and Buddha. He thinks he shall be able to trace the amalgamation of the sects by their sculpture; and he is preparing to make drawings of the most interesting of these relics. He states that he has discovered another of Asoka's pillars at Bukrowe, the site of an ancient city of the Buddhists on the banks of the Lilajun.

Vested Rights v. Public Health.—A short time since a lecture was delivered in Bedford by Mr. J. Wyatt, on the injurious effects of intra-mural burials. On the subject of interference with vested rights and interests, he said:—"If I understand this part of the question correctly, it is, that there must be no interference with those rights, without an equivalent being provided. It appears to me that there need be no great disturbance of the present vested interests of the clergy, nothing more than a transfer of the means from which those interests are derived, from one spot to another. The same officials, the same fees might be continued, and I cannot suppose that any objection can really be made to the immediate removal and alteration of a system which cannot be continued much longer. If the system is to be entirely dealt with as a matter of vested interests, then I think as much can be said in favour of its abolition as for its continuance in its present state, for I think the owners of property surrounding the grave yards could bring in a heavy account of depreciation of its value, owing to the nuisance created by the miasmata. We find that vested interests have but a feeble claim, and a feebler compensation, when a nuisance created by a factory or unwholesome business is put down in a town. But there is even a heavier account than that to be brought into consideration—the vested rights of the people, who demand that their health shall not be interfered with. In my opinion, this is the paramount claim of all, and ought first to be satisfied, and legislated for; all others are secondary in importance. I, for one, dare not undertake the responsibility of saying, that there are any considerations in the world that should be placed in the scale with it."

Ipswich Antiquities.—We stated, some time since, that although a number of the Ipswich municipal authorities are themselves archæologists, they nevertheless intended to remove another relic of the olden time from Ipswich, namely, the refectory of a monastry of the Black Friars of the Dominican order, (according to Sir Francis Palgrave, the only one in this country), used latterly, though not now, as a grammar school-room. The materials have been sold to Mr. J. A. Pettitt, builder, for removal, not from any urgent necessity, but merely that the ground may be let for building purposes. Mr. Pettitt himself, however, has the good taste and feeling, which his archæological fellow-townsmen of the corporation have not, to be anxious to restore the building, if a lease of the ground can be effected. Mr. J. M. Clark, architect, has prepared a plan of restoration, at small cost, which the mayor and others of the corporation have themselves approved of.

The Yankee Vote Recorder.—An ingenious machine is said to have been lately invented bya convict in one of the state prisons,—as a peace offering to the Government, no doubt,—for the purpose of recording the votes, or yeas and nays, in the legislative assemblies. It consists of a register to stand before the clerk, with wires and knobs to radiate forth to the seats of the members, and by pulling which the vote is registered, while the aggregate vote displays itself at once before the eyes of the clerk in large figures, a record being also at the same time marked to shew how each member votes. If there be any truth in this detail, the invention must certainly be a very ingenious one, although we confess it savours a good deal more of Punch's ingenuity, or that of Yankee *invention* itself, than of matter of fact and practical reality.

The Speedy Lewis.—Sir: In looking over your interesting journal of last week, I find an account of a lewis described by Mr. Russell. I beg to say I made lewises of the same kind in the latter part of the year 1845, and tried them with some of the blocks of stone used at the British Museum, weighing about ten tons, but as the experiment was not to my satisfaction, I abandoned the plan, as I considered there was a risk. After lifting the stone fifteen feet, we surged it three times; upon the last occasion the block slipped from the lewis, which I considered a failure.—J. James. Lambeth.

Art-Union of London.—The lists will close on the last day of the present month. We are glad to learn that Mr. Doo has, at length, completed his plate of "The Convalescent."

Projected Works.—Advertisements, to which we have an index, were issued through the newspapers lately current, announcing that contract-tenders were wanted for the erection of a Church at Balby; almshouses and a school and master's house at Ely; schools at South Shields; barracks at Portsea; workhouse alterations and additions at Hoxne Union; toll-house near Eyemouth; iron roof for gas-work retort-house at Hastings; goods-shed at Keighley; 6 stations on London and Brighton railway; workmen's houses at Ashford; earth, brick, and masonry work of 9 miles, and 6 and a half miles of Northern Counties Union railway; the whole works on 7 and a half miles of Leeds and Thirsk; 9 miles of Newport and Hereford (extension of time); and 11 miles of Leicester and Swannington railway; also for repair of 2,000 yards of road at Worcester; and 37 miles of road in Hampshire, &c.; and for formation of 3 miles of road, and the building of bridges in Perthshire, &c.; also for execution of various works, and removal of roof-lead at Kimbolton Castle; and for supply of gas at Sheffield; and of 2,500 tons malleable iron rails, 800 tons cast iron chain, and 36,000 sleepers for Glasgow and Airdrie railway.

MEETINGS OF SCIENTIFIC BODIES

During the ensuing Week.

Monday, March 15th.—Statistical Society, 12, St. James's Square, 8 P.M. Anniversary.

Tuesday, 16th.—Institution of Civil Engineers, 25, Great George-street, 8 P.M.

Wednesday, 17th.—Society of Arts, Adelphi, 8 P.M.; Association of Architectural Draughtsmen, 33, South-ampton-street.

Thursday, 18th.—Royal Society, Somerset House, 8½ P.M.; Society of Antiquaries, Somerset House, 8 P.M.

TO CORRESPONDENTS.

"*A. T.*"—(Hope Coffee House) *B.* cannot block up lights enjoyed for 30 years.

"*Wimundhamensis.*"—Architectural education will be treated of by us before long.

"*Reluctant Spectator.*"—We shall be glad to hear from him.

"*C. F.*"—An account of raising the Luxor Obelisk in Paris was published in Loudon's Architectural Magazine soon after the occurrence. The drawing shall be returned.

"*H. W. J.*"—Write to the Secretary of Society of Arts, Adelphi.

"*F. H.*"—(Berkeley) We will endeavour to see the invention in question. If, however, we visited every invention on which correspondents ask our opinion, we should have little time for any thing else.

"*A. North.*"—We know of no architectural lending-library. It is much wanted.

"*J. C.*"—(Islington). The Act does not require that *streets* should have two entrances. Houses would not be permitted to be built as sketched.

"*G. B. W. J.*"—Thanks for the lithograph. It ought to have been acknowledged before.

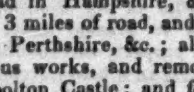
"*Consuming Smoke.*"—A correspondent asks for "A plan to consume the smoke of a brick kiln: the same is doomed in, and it is necessary that the blaze from the furnaces should ascend through the body of the kiln, to make the bricks of a clear colour."

"*A Londoner.*"—The old map of London was published some years ago, but we cannot tell where it can be obtained. A new map of London on a large scale is much needed. Sir Robert Peel, when premier, promised it should be done.

"*H. H.*"—We regret that we have not time to supply information as to the erection of a lecture room. The course adopted seems a wise one.

Received.—"Dr. B." "A Subscriber." "*C. W.*" "G. Clark." "Lady B." "Bond question." "J. S." (Guildford Street.) "S. J. K." "W. B." "W. H. C." "Treatise on Mechanics," by J. F. Heather, B.A., of the Royal Military Academy, Woolwich, No. I. (Weale, Holborn). *Promises well.* "Popular Atlas of the World, consisting of detailed Maps of the different parts of the Globe, with statistical descriptions." No. I. (Jas. Wyld, Charing Cross). *Wonderfully cheap.* Haydn's "Creation," Nos. 4 & 5. (Novello, Dean St.) Handel's "Messiah," Nos. 7 & 8. (Novello). "On the Resistance to Railway Trains," by W. Harding, C.E. "The Abuses of The National Gallery, with observations on the minutes of the Trustees," by Verax. (Pickering, Piccadilly).

ADVERTISEMENTS.



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ROYAL ACADEMY EXHIBITION.—TO ARCHITECTS.—Mr. WILLIAM CANSDELL, Architectural Artist, will be glad to receive instructions from the Profession, for Drawings for the approaching exhibition.—Address, W. C., office of "The Builder," 2, York-street, Covent Garden.

LECTURES on DESCRIPTIVE ASTRONOMY, during Lent, at the ROYAL POLYTECHNIC INSTITUTION, by Dr. Bachhoffner, on the Mornings and Evenings of Mondays, Wednesdays, and Fridays, with ILLUSTRATIONS, in which the Latest Discoveries are included, accompanied with new and appropriate MUSIC, by Dr. Wallis. LECTURES on ARMSTRONG'S HYDROELECTRIC MACHINE on the alternate Mornings and Evenings. CHEMICAL LECTURES. The OPTICAL EFFECTS include the last beautiful DISSOLVING VIEWS. EXPERIMENTS with the DIVER and DIVING-BELL, &c., &c.—Admission, 1s.; Schools, Half-price.

THE EXHIBITION OF SELECT SPECIMENS OF ENGLISH MANUFACTURES, on and after the 11th of March, will be OPENED GRATUITOUSLY every day, except Saturday and Sunday, between 11 and 4, at the SOCIETY OF ARTS, Great Room, John-street, Adelphi. TICKETS of ADMISSION and Catalogues may be had of the Members of the Society, of the Exhibitors, and of the undermentioned:—OXFORD-STREET: Mr. John Mortlock, No. 250; Mr. J. Phillipps, No. 359.—REGENT-STREET: Mr. White, No. 210.—PALL MALL: Messrs. Graves, No. 6; and Messrs. Colnaghi, No. 13.—NEW BOND-STREET: Mr. Pratt, No. 118.—OLD BOND-STREET: Mr. J. Cundell, No. 12.—PICCADILLY: Mr. W. Pickering, Bookseller, No. 177.—STRAND: Mr. Milledge, No. 65; Messrs. Greenhill, No. 148; Mr. J. Tennant, No. 149.—FLEET-STREET: Mr. George Bell, No. 186; Messrs. Grant and Griffith, corner of St. Paul's Churchyard, Ludgate-street.

N.B. No Tickets can be had, except by members, direct from the Society's House.

PAPER-HANGINGS to the TRADE.—French Papers superseded.—Messrs. HENNELL and CROSBY, Paper Stainers, Queen-street, Southwark-bridge-road, beg to inform the Trade that they can enable them to sell Satin Papers, Elegant Designs, at 2s. 6d. per French piece. Retail.—Cheapest house for Panel Decorations and Clouded Papers.

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PUBLICATIONS.

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London, 193A, Piccadilly, Feb. 27, 1847.

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THE COMMISSIONERS of SEWERS for the LIMITS give NOTICE, that their Office, Hatton-garden, is open daily between the hours of Ten and Four, where information can be obtained (gratis) by persons about to Purchase or Rent Houses or Property, or take Land for Building purposes, of the situation and level of the public Sewers, capable of affording sufficient Drainage, and which they recommend all such Persons to apply for at the above office.

By the Court,
STABLE and LUSH, Clerks.

COURT OF SEWERS FOR WESTMINSTER, AND PART OF MIDDLESEX, No. 1, Greek-street, Soho-square.

TO BUILDERS and Others interested in buildings or in ground for building upon, within the district under the jurisdiction of this Court, drained by water-courses falling into the river Thames, between the city of London and the parish of Fulham.

The Commissioners hereby give notice, that by an Act of the 47th Geo. 3 (chap. 7, local), it is required that, previously to the making of any new sewer in any street, lane, or public way, or in any part intended to become a street, lane, or public way, or to carry or drain off water from any house, building, yard, or ground, into any sewer under their management, or within their jurisdiction, a notice in writing shall be given to them, or to their clerk at their office, and that such new sewer or sewers shall be constructed and made in such manner and form as shall be directed by the said Commissioners, and not otherwise.

And, in order to prevent the serious evils and inconveniences that must arise from ground proposed to be built upon being excavated at too great a depth, the Commissioners have directed that, upon application being made at this office previously to the excavation of such ground, information shall be given as to the lowest depth at which the same can be drained.

And the Commissioners do also give notice that, whenever the lower floors or pavements of buildings shall have been laid so low as not to admit of their being drained with a proper current, they will not allow any sewers, or drains into sewers, to be made for the service of such buildings.

It is recommended to all persons about to purchase or take houses, or other premises, to ascertain whether such premises have separate and distinct drains into common sewers.

All petitions must be delivered at this office at least three clear days before they are presented to the commissioners; and all such petitions will be called on in the order of their application, and the name of any party not present when called on to support the application will be struck out, and the proceedings must in consequence be commenced de novo.

All communications made with any sewer without leave of the Commissioners will be cut off, and the parties making the same will subject themselves to a fine.

The provisions of the Metropolitan Buildings Act (7 and 8 Victoria, c. 84) do not supersede the authority of the Commissioners of Sewers in the above respects, but their powers are expressly reserved, and their regulations made subservient to the purposes of the Act. The execution of such works, under the superintendence of the district surveyor alone, cannot therefore warrant the making of any sewers or drains within this commission, nor relieve the parties making them from the penalties above mentioned.

By order of the Court,
LEWIS C. HERTSLET, Clerk.